

**THE PROTECTION OF WORKS CREATED BY ARTIFICIAL INTELLIGENCE
ALGORITHMS IN THE UNITED STATES AND THE EUROPEAN UNION**

Master's Thesis

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Abstract

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This thesis examines the copyrightability of machine-generated content in the United States and the European Union. For the purposes of this thesis, machine-generated content is content that has been created by an autonomous machine or an artificial intelligence algorithm. The amount of content created by autonomous machines has increased over the years, and today there are millions upon millions of works created solely by artificial intelligence systems.

The thesis is divided into a total of nine chapters, outlining certain definitions, justifications for copyright protection, different stances and issues related to AI authorship, and the concept of originality. Most importantly, this thesis looks into the legal systems of the United States and the European Union, and attempts to determine whether AI-generated content could be eligible for copyright protection under those two legal systems.

The chapter on the European Union focuses on both, the EU in-general and also on two current member states of the EU: Finland and the United Kingdom. Both subchapters outline the current legislation within the aforementioned countries, as well as some case law in relation to the topic of the thesis. Conversely, the chapter on the United States looks into the current copyright regime in the US, attempting to determine whether AI-generated content could receive copyright protection according to the current laws and case law of the United States.

Keywords:

Artificial intelligence, copyright law, intellectual property law, machine learning, EU law, US law

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References

Articles

1. Amoiridis, Konstantinos, Maastricht University, The timeline of e-personhood: a hasty assumption or a realistic challenge? Available at:
<https://www.maastrichtuniversity.nl/blog/2019/04/timeline-e-personhood-hasty-assumption-or-realistic-challenge>
2. Copeland, B. J. Encyclopedia Britannica, Artificial Intelligence. Available at:
<https://www.britannica.com/technology/artificial-intelligence#ref219078>
3. Cornell Law School, Intellectual Property Clause. Available at:
https://www.law.cornell.edu/wex/intellectual_property_clause
4. Deahl, Dani, The Verge, How AI-Generated Music is Changing the Way hits are Made. Available at: <https://www.theverge.com/2018/8/31/17777008/artificial-intelligence-taryn-southern-amper-music>
5. Derclaye, Estelle, Football Dataco: skill and labour is dead! Available at:
<http://copyrightblog.kluweriplaw.com/2012/03/01/football-dataco-skill-and-labour-is-dead/>
6. Fieldfisher, Graphical Users Interfaces can be protected by copyright, rules European Court. Available at: <https://www.fieldfisher.com/en/insights/graphical-user-interfaces-can-be-protected-by-copyright-rules-european-court>
7. Fieldfisher, Live Premier League Football Broadcasting Rights: The CJEU judgment. Available at: <https://www.fieldfisher.com/en/insights/live-premier-league-football-broadcasting-rights-the-cjeu-judgment>
8. Fieldfisher, Football Dataco copyright in databases. Available at:
<https://www.fieldfisher.com/en/insights/football-dataco-copyright-in-databases>
9. Fieldfisher, English High Court Applies European Software Ruling in SAS v WPL. Available at: <https://www.fieldfisher.com/en/insights/english-high-court-applies-european-software-ruling-in-sas-v-wpl>

10. Guadamuz, Andres, Artificial Intelligence and Copyright (October 1, 2017). WIPO Magazine.
11. Guadamuz, Andres, Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works. Available at:
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes
12. Goldman, Kathryn, Who Owns Copyright? My Company or Me? Available at:
<https://creativelawcenter.com/who-owns-copyright/>
13. He, Tianxiang, The Concept of Originality in the Copyright Issue of AI-generated Works in China. Available at: <https://www.qmul.ac.uk/euplant/blog/items/the-concept-of-originality-in-the-copyright-issue-of-ai-generated-works-in-china.html>
14. Jaacks, Dustin, Artificial Intelligence in EU Copyright Law (March 1, 2018). Available at: <https://medium.com/@dustin.jaacks/artificial-intelligence-in-eu-copyright-law-55798700da4>
15. Klaris, Edward, Inside Views: Copyright and Artificial Intelligence (January 30, 2018). Available at: <http://www.ip-watch.org/2018/01/30/copyright-artificial-intelligence/>
16. Lewis, Tanya, Live Science, A Brief History of Artificial Intelligence. Available at: <https://www.livescience.com/49007-history-of-artificial-intelligence.html>
17. Liu, Shanhong, Artificial Intelligence (AI) worldwide – Statistics & Facts. Available at: <https://www.statista.com/topics/3104/artificial-intelligence-ai-worldwide/>
18. Merriam-Webster Online Dictionary, Definition of Artificial Intelligence. Available at: <https://www.merriam-webster.com/dictionary/artificial%20intelligence>
19. Mordvintsev, Alexander, DeepDream – a code example for visualizing neural networks. Available at: <https://ai.googleblog.com/2015/07/deepdream-code-example-for-visualizing.html>
20. University of Washington, the History of Artificial Intelligence. Available at: <https://courses.cs.washington.edu/courses/csep590/06au/projects/history-ai.pdf>
21. Pathmind, A.I. Wiki: A Beginner’s Guide to Important Topics in AI, Machine Learning, and Deep Learning. Available at: <https://pathmind.com/wiki/ai-vs-machine-learning-vs-deep-learning>
22. Ray, Shaan, History of AI, Towards Data Science (August 11, 2018). Available at: <https://towardsdatascience.com/history-of-ai-484a86fc16ef>

23. Rockwell, Anyoha, the History of Artificial Intelligence. Available at:
<http://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/>
24. Sahota, Neil, A.I. May Have Written This Article. But Is That Such a Bad Thing? (September 16, 2018). Available at:
<https://www.forbes.com/sites/cognitiveworld/2018/09/16/did-ai-write-this-article/#a9cb05f18859>
25. Srivastav, Vipul, Entrepreneur, How is Artificial Intelligence Revolutionizing Small Businesses? Available at: <https://www.entrepreneur.com/article/341976>
26. Videla, Alvaro, Dewey – The First Artificial Intelligence Novelist (August 20, 2017). Available at: https://medium.com/@old_sound/dewey-the-first-artificial-intelligence-novelist-9ecd783c8fae
27. Vincent, James, The Verge, DeepMind’s AI can detect over 50 eye diseases as accurately as a doctor. Available at: <https://www.theverge.com/2018/8/13/17670156/deepmind-ai-eye-disease-doctor-moorfields>

Bibliography

1. Abbott, Ryan, I think, Therefore I Invent: Creative Computers and the Future of Patent Law. Boston College Law Review, Vol. 57, No. 4, 2016.
2. Adrian, Angela, Law and Order in Virtual Worlds: Exploring Avatars, Their Ownership and Rights. 2010.
3. Alen-Savikko, A. K., Ballardini, R. M., & Pihlajarinne, T. E. (2018). Tekoälyn tuotokset ja omaperäisyysvaatimus - kohti koneorientoitunutta tekijänoikeutta? *Lakimies*, 116(7-8), 975-995.
4. Butler, Timothy L. Can a Computer be an Author? Copyright Aspects of Artificial Intelligence. 4 Hastings Comm. & Ent. L.J. 707 1982.
5. Colston, Catherine, Principles of Intellectual Property Law. 1999.
6. Farr, Evan H. Copyrightability of Computer-Generated Works. (1989) 15 Rutgers Computer & Tech. L.J. 63

7. Gervais, Daniel J. The Machine as Author (March 25, 2019). Iowa Law Review, Vol. 105, 2019; Vanderbilt Law Research Paper No. 19-35.
8. Ginsburg, Jane C. Overview of Copyright Law (July 1, 2016). Forthcoming, Oxford Handbook of Intellectual Property, Rochelle Dreyfuss & Justine Pila, Eds.; Columbia Public Law Research Paper No. 14-518.
9. Ginsburg, Jane C. People Not Machines: Authorship and What It Means in the Berne Convention. IIC 49, 131-135 (2018).
10. Ginsburg, Jane C. The Concept of Authorship in Comparative Law, 52 DePaul Law Review, 1063 (2003).
11. Harenko, Kristiina; Niiranen, Valtteri; Tarkela, Pekka, Tekijänoikeus (2016). Alma Talent.
12. Hristov, Kalin, Artificial Intelligence and the Copyright Dilemma (September 1, 2016). IDEA: The IP Law Review, Vol. 57, No. 3, 2017.
13. Husa, Jaakko, Comparison (May 7, 2018). David S. Law and Malcolm Langford (eds), 'Research Methods in Constitutional Law: A Handbook' (Edward Elgar Publishing, 2018); Helsinki Legal Studies Research Paper No. 51.
14. Jain, Sankalp, The Principle of Idea-Expression Dichotomy: A Comparative Study of US, UK & Indian Jurisdictions. (March 26, 2012).
15. Karim, Rezaul, The Idea/Expression Dichotomy and Its Impacts on the Blurring Copyright-Patent Paradigm. (January 2014). University of Birmingham.
16. Karnell, Gunnar W. G. European Originality: a Copyright Chimera. Scandinavian Studies in Law. Stockholm Institute for Scandinavian Law 2002.
17. Lui, Deming, Of Originality: originality in English copyright law: past and present (2014). Sweet & Maxwell Ltd.
18. Pagollo, Ugo, Vital, Sophia, and Co. – The Quest for the Legal Personhood of Robots (September, 2018). University of Turin.
19. Samuelson, Pamela, Allocating Ownership Rights in Computer-Generated Works, 47 U. Pitt. L. Rev. 1185 (1985).
20. Samuelson, Pamela, Justifications for Copyright Limitations & Exceptions (February 10, 2015). Forthcoming chapter in Ruth Okediji (ed.), Copyright Law in an Age of Limitations and Exceptions.

21. Wu, Andrew J., From Video Games to Artificial Intelligence: Assigning Copyright Ownership to Works Generated by Increasingly Sophisticated Computer Programs. AIPLA Quarterly Journal, Wntr, 1997, Vol.25(1), p. 130-178

Case law

Finland

1. TN 1987:8
2. TN 2005:10
3. TN 2006:14
4. TN 2010:2

Denmark

1. Infopaq International v. Danske Dagblades Forening, Case C-5/08.

United Kingdom

1. Express Newspapers Plc v Liverpool Daily Post & Echo Plc [1985] 3 All E.R. 680.
2. Nova Productions Ltd v. Mazooma Games Ltd & Ors (CA).
3. Painer v. Standard VerlagsGmbH, Case C-145/10.
4. SAS Institute Inc. v. World Programming Ltd Case C-406/10.

United States

1. Alfred Bell & Co. Ltd. v. Catalda Fine Arts, Inc. et al, 191 F.2d 99 (2d Cir. 1951).
2. Feist Publications Inc. v. Rural Telephone Service Company, Inc., 499 U.S. 340 (1991).
3. Naruto v. Slater, No. 16-15469 (9th Circuit 2018).

Legal Sources and Press Releases

1. The Copyright, Designs and Patents Act of 1988.
2. Copyright Act of Finland (404/1961)
3. Copyright Committee Report KM 1987:8 (Finland), Tietotekniikka ja tekijänoikeus. Tekijänoikeuskomitean IV osamietintö.
4. German Act on Copyright and Related Rights. Available at: https://www.gesetze-im-internet.de/englisch_urhg/englisch_urhg.html
5. U.S. Constitution
6. U.S. Constitution Article I Section 8 Clause 8. Available at: <https://fairuse.stanford.edu/law/us-constitution/>
7. U.S. Copyright Office, Compendium of U.S. Copyright Office Practices § 101 (3d ed. 2017).
8. Directive 2009/24/EC of the European Parliament

Abbreviations

AI	Artificial Intelligence
CDPA	UK Copyright, Design and Patents Act 1988
CJEU	Court of Justice of the European Union
EU	European Union
ML	Machine Learning
UK	United Kingdom
US	United States
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

1. INTRODUCTION

The purpose of this Master's Thesis is to look into the relationship between artificial intelligence and copyright law from a comparative law perspective. More specifically, this thesis will compare and contrast the differences between the laws of the European Union and the United States of America in relation to works created by artificial intelligence algorithms, and whether AI-generated works are granted copyright protection within the respective jurisdictions examined in this Master's Thesis. Furthermore, this thesis will examine the concepts of authorship and originality in regards to AI-generated works. In specific, this thesis attempts to find an answer to the question whether works created by artificial intelligence could be granted copyright protection.

The reason as to why the author of this thesis has chosen this topic is due to the fact that artificial intelligence is a quickly growing phenomenon, and new technologies in relation to AI are constantly being developed. Copyright law and AI are also a tricky mixture due to issues relating to legal personhood, among other things. The question, "who owns the Copyright?" is constantly on the minds of jurists and engineers alike when discussing works generated via AI-algorithms. Should the owner of the copyright be the owner of the AI-software? Or could the rights be granted to the ones who actually programmed the software itself? Most importantly, is it even possible to grant Copyright protection to works created via AI-algorithms? The author of this thesis intends to look at all of these questions and more in their Master's Thesis, and attempt to evaluate whether the answers to these questions are true or false, or perhaps something in between.

1.1. Background

Artificial intelligence is currently a hot topic all over the world. While the concept of AI is nothing new, as the concept has been examined many times previously in science-fiction, the technology surrounding artificial intelligence has vastly improved in the past few decades.¹ Computers have become more efficient through the hard work of engineers and scientists alike. As such, humans have reached the ability to create functional AI solutions that are able to generate artistic works, such as books, paintings, and music, to name a few, with amazing precision and very little time and effort. At the time of this writing, thousands of works are being generated via AI-algorithms, many of which are undoubtedly very similar to each other in one way or another.² While plagiarism is an issue in relation to AI-generated works, the focus of this thesis will mainly be on the protection of AI-generated works through copyright law.

1.2. Research questions and limitations

The main research question of this Master's Thesis is whether machine-generated content could be eligible for copyright protection and, if so, who the owner of the rights to the work would be? As such, the author intends to look into different countries' copyright legislation and legal precedents in relation to copyright law in order to evaluate how AI-generated works are protected within those countries, or whether AI-generated works are protected at all in their respective jurisdictions. Subsequently, the author intends to look into whether AI could be granted legal personhood in order to grant it authorship. Furthermore, the author of this thesis will look into the concept of originality in regards to AI-generated works.

¹ "Artificial Intelligence and the Copyright Dilemma" by Kalin Hristov, p. 450

² See "The Machine as Author" by Daniel Gervais

1.3. Research methods and sources

The research method used in this Master's Thesis will be a comparative one. The author intends to compare and contrast the laws of the European Union and the United States of America in relation to the problem introduced in the thesis. More specifically, the author intends to look into the laws of Finland and the United Kingdom, respectively, when evaluating whether AI-generated works are given legal protection or not. In respect to the United States, the author intends to only look into the federal law in relation to their work due to the fact that US copyright law is mostly enacted on the federal level. However, the author will be looking into case law from the US in relation to this work.

The reasons why the author has chosen the two aforementioned continents for their thesis are because, first of all, the United States is home to many technology firms, such as Amazon and Google, and, as such, the U.S. is among the countries on the forefront of technology. Second of all, the copyright laws of the United States differ enough from the laws in EU countries in order to be compared with each other efficiently. The reason why the author has chosen Finland and the United Kingdom, specifically, is because Finland's copyright law differs quite a bit from the UK's copyright legislation due to the fact that both countries employ different legal systems within their jurisdictions. In spite of the fact that the UK is leaving the EU due to Brexit, the effect the UK has had on EU law and on other member states is still quite significant.

1.4. Structure

This Master's Thesis is divided into a total of eight chapters. The first chapter serves as the introduction to this work, including the background to the topic, the research questions and limitations in relation to the work, the method of research and the sources used in the research, and this part, the general structure of the thesis.

The second chapter attempts to define the concept of artificial intelligence in the context of this thesis by examining the history and the definition of AI. In addition, the chapter will look into the differences of artificial intelligence and machine learning, and attempt to elaborate further the meanings of these aforementioned terms.

The third chapter will focus on different justifications for copyright protection. Several arguments for and against the use of copyright will be looked at in detail in the chapter. Furthermore, certain limitations for copyright will be listed and detailed in the third chapter for the purposes of clarity.

The fourth chapter will look at artificial intelligence in relation to authorship. The chapter will first outline the issues in relation to the concept of authorship in relation to the subject of the thesis, after which the concept of ownership will be examined in more detail in relation to copyright. The concept of ownership is an important part of the chapter as the chapter will attempt to find out who the owner of machine-generated works could be in regards to the legislations of different countries. The chapter will discuss the concept of originality, which is an equally important aspect of this thesis. The chapter will attempt to examine and define the concept of originality for the purpose of clarity. The concept of originality will be examined further in subsequent chapters. Furthermore, the chapter will discuss the concepts surrounding legal personhood and the idea / expression dichotomy.

The fifth and sixth chapters will look at the situation within the European Union and the United States of America in relation to copyright law and works created through computer generation. The fourth chapter will outline European perspectives, whereas the fifth chapter will look at the stance of the United States in relation to the topic of this thesis. The views of several countries will be included, but the focus of the thesis will mainly be on Finland, the United Kingdom, and the United States. The chapter will also introduce several legal cases in relation to the topic from each of the aforementioned countries.

The seventh chapter will be focused on examining the similarities and the differences of the countries and their respective legal systems that have been introduced in chapters four and five in relation to copyright law. The chapter will attempt to outline and analyze the similarities and differences in a thorough and concise manner by including all of the most important details in relation to the topic of this thesis.

The eighth and the ninth chapters will look at the future implications related to the topic of this thesis, and come up with a coherent conclusion regarding the subject and the research questions introduced and evaluated in this work. The eighth chapter will attempt to evaluate how the situation may develop in the future in relation to the protection of machine-generated content, and whether the content could perhaps ever be considered original enough to be warranted copyright protection. The ninth chapter will subsequently conclude the thesis.

2. DEFINING ARTIFICIAL INTELLIGENCE

2.1. A brief history of Artificial Intelligence

While the scientific term “artificial intelligence” (hereinafter referred to as “AI”) is relatively new, the concept of AI is a much older phenomenon. Some scholars have attributed the concept to the thinking of classical philosophers in ancient Greece. However, history has shown that even before the Greeks, the Chinese and the Egyptians have had similar ideas regarding AI, manifested in the construction of “automatons,” semi-autonomous devices that operated with very little human support.³ As such, it can be deduced that human beings have always had a peculiar fascination regarding man-made objects becoming living, sentient or, at the very least, self-operable.

The fascination regarding artificial intelligence continued throughout centuries in the works of philosophers, scholars and writers. For instance, the 20th century classic known as the *Wizard of Oz* features the Tin man, a sentient robot that wishes to become more human by receiving a human heart.⁴ Another classic example, *Metropolis*, introduced a human-like robot that mimicked Maria, one of the main characters of the film. Similar works of fiction have been created by humans for a century thereafter. However, the concept of artificial intelligence ceased to be mere fiction during the Second World War as the British, with the exquisite help of the late and great Alan Turing, managed to decipher the Nazis’ coded messages by using the Bombe machine, a device that utilized artificial intelligence algorithms in order to decode secret messages.⁵

The term “artificial intelligence” was coined at the Dartmouth Conference in 1956 by an American computer scientist named John McCarthy.⁶ The concept of AI itself soared greatly in

³ “A Brief History of Artificial Intelligence” by Tanya Lewis, available at: <https://www.livescience.com/49007-history-of-artificial-intelligence.html>, accessed on 06.01.2020

⁴ “The History of Artificial Intelligence” by Rockwell Anyoha, available at: <http://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/>, accessed on 06.01.2020

⁵ University of Washington, the History of Artificial Intelligence, p. 4, accessed on 06.01.2020 at <https://courses.cs.washington.edu/courses/csep590/06au/projects/history-ai.pdf>

⁶ Ibid., p. 4

the scientific community. New AI devices were created, each more magnificent than the previous one. One such device was the Ferranti Mark 1, a machine constructed in 1951 that could play checkers at a master level.⁷ Other, even more useful devices were built, throughout the next two decades. Some devices were designed to solve mathematical equations, others were designed to solve other types of problems. For example, the Japanese built the WABOT-1 in 1972, which was considered “the first intelligent humanoid robot.”⁸

The development of artificial intelligence came to a halt in 1975 due to the inefficiency of the computers at the time. It became virtually impossible to process the enormous amount of information required for AI-related algorithms. As such, governments and corporations became disinterested in the concept of AI and subsequently cut the funding for AI-related projects. This period, spanning from 1975 to 1995, was dubbed the “AI Winter.”⁹ The term itself came from the word “nuclear winter,” a theory according to which “mass use of nuclear weapons would blot out the sun with smoke and dust, causing plunging global temperatures, frozen Earth, and the extinction of humanity.”¹⁰

In spite of the dramatic name for the period, the AI Winter was not exactly as terrifying for AI as the name may initially suggest. While AI-related projects may have lost their funding, many other projects that were closely related to artificial intelligence, were birthed and disguised under new names, including “Machine Learning,” and “Pattern recognition.” This allowed the projects to continue even during the time when the concept of AI had been nearly forgotten by governments and corporations, but not scientists.¹¹

Indeed, while governments and corporations may have lost faith in AI, many proponents of the concept remained within the science community, and they worked tirelessly in order to keep the concept of AI afloat. The proponents of AI finally caught their break when computers became more and more powerful during the 1990s. As the computers received more processing power, AI-related devices and projects became more sophisticated. As such, people became more and

⁷ Shaan Ray, History of AI, Towards Data Science, accessed on 06.01.2020 at <https://towardsdatascience.com/history-of-ai-484a86fc16ef>

⁸ Ibid.

⁹ Ibid.

¹⁰ University of Washington, the History of Artificial Intelligence, p. 17, accessed on 06.01.2020 at <https://courses.cs.washington.edu/courses/csep590/06au/projects/history-ai.pdf>

¹¹ Ibid., p. 18

more interested in the concept and future of artificial intelligence. By the late 1990, AI had finally become a hot topic again. Garry Kasparov, the number one player of Chess was defeated by IBM's Deep Blue, a machine that utilized machine learning in order to function.¹² While the burst of the dotcom bubble halted some of the AI funding in the early 2000s, machine learning had already become such a prevalent concept that its development could no longer be stopped.¹³

Today, the utilization of AI has become second nature for many companies, such as Amazon and Google, while building their services and processing their data, among many other uses.¹⁴

However, AI is not only used by big companies anymore, and it's definitely not only used for mere games of Chess or for collecting vast amounts of information about a specific topic any longer. AI is additionally being used for far more sophisticated matters today, such as detecting diseases¹⁵ and making music.¹⁶

Furthermore, thanks to vast advancements in AI technology, artificial intelligence solutions have become more affordable for smaller companies.¹⁷ Therefore, it is not only the big businesses that get to benefit from the advancements of AI, but also the small companies that compete in the market with each other. The utilization of AI is an important tool in cutting costs of a business as the use of AI requires less manpower and is way more efficient than using real humans for conducting certain tasks, such as when dealing with large amounts of data or tagging products at a retail store.¹⁸ It can also be argued that when the cost of production becomes small, the cost of the product will subsequently become lower, which, in turn, is also beneficial for the consumer.

¹² Shaan Ray, History of AI, Towards Data Science, accessed on 06.01.2020 at <https://towardsdatascience.com/history-of-ai-484a86fc16ef>

¹³ Ibid.

¹⁴ Ibid.

¹⁵ "DeepMind's AI can detect over 50 eye diseases as accurately as a doctor" by James Vincent, available at: <https://www.theverge.com/2018/8/13/17670156/deepmind-ai-eye-disease-doctor-moorfields>, accessed on 06.01.2020

¹⁶ "How AI-Generated Music is Changing the Way hits are Made" by Dani Deahl, available at: <https://www.theverge.com/2018/8/31/17777008/artificial-intelligence-taryn-southern-amper-music>, accessed on 06.01.2020

¹⁷ "How is Artificial Intelligence Revolutionizing Small Businesses?" by Vipul Srivastav, available at: <https://www.entrepreneur.com/article/341976>, accessed on: 06.01.2020

¹⁸ Ibid.

2.2. The Definition of Artificial Intelligence

The Merriam-Webster online dictionary defines artificial intelligence as follows:

1. *“A branch of computer science dealing with the simulation of intelligent behavior in computers.”*¹⁹
2. *The capability of a machine to imitate intelligent human behavior.”*¹⁹

The Encyclopedia Britannica defines artificial intelligence in a similar fashion:

*“Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.”*²⁰

However, other definitions of artificial intelligence exist, as well. The choice of definition depends upon the main use intended for the program. There are currently two typical approaches and three different goals in relation to AI programs. These are known as “symbolic” and “connectionist approaches.” The goals are divided into what is known as “strong AI,” “applied AI,” and “cognitive simulation.” It must also be noted that there are other types of goals and approaches in existence, but the aforementioned goals and approaches are the ones that are most typically used in AI research.²¹

The “symbolic” and the “connectionist” approaches are both methods applied in AI research. The “symbolic approach”, also known as the “top-down approach,” utilizes the processing of symbols in its functioning. The “connectionist approach,” also known as the “bottom-up approach” is a competing research method that utilizes artificial neural networks in order to imitate the brain’s structure.²² Both research methods have been followed for decades by scientists that focus on AI research. However, the “connectionist” method lost its support for a period of time from 1970 to 1980. In spite of the lack of popularity for the “connectionist” method in the 1970s, both methods are in wide use today. Both methods also have their own

¹⁹ Merriam-Webster, definition of artificial intelligence, available at: <https://www.merriam-webster.com/dictionary/artificial%20intelligence>, accessed on 08.01.2020

²⁰ “Artificial Intelligence” by B.J. Copeland, Encyclopedia Britannica, available at: <https://www.britannica.com/technology/artificial-intelligence#ref219078>, accessed on 08.01.2020

²¹ Ibid.

²² Ibid.

problems. While the “symbolic approach” works best in closed simulations, the method breaks apart when applied to the real world. The “connectionist” method, however, fails to live up to its expectations due to the complexity of real neural networks, and is thus unable to keep up with the patterns in order to mimic the neurons of actual, living beings, no matter how simple their nervous systems are.²³

In addition to the aforementioned methods, there are also three major goals in existence in relation to AI research. These goals are “strong AI,” “applied AI,” and “cognitive simulation.”²⁴ The goal of “strong AI” is the most ambitious one of the three: to create a machine that can think independently and for themselves, without any human assistance. The underlying idea is to achieve a human-like robot that could even fool other humans into thinking that the machine was actually a human being, as well. Due to the ambitious nature of this goal, “strong AI” has not yet been achieved. While there has been some progress, “strong AI” is generally seen as a waste of time by scientists working on AI.²⁵

The next two goals are less ambitious than the previous one, but they have at least come into fruition. “Applied AI,” for instance, has been utilized successfully in the fields of health care and finance, as there have been systems created that are able to diagnose diseases and help with stock-trading.²⁶ “Cognitive simulation,” on the other hand, has been used in neuroscience and cognitive psychology. In this regard, the system is used in testing how the human mind works.²⁷

This thesis is looking at the relationship of artificial intelligence and copyright law in an attempt to determine whether works created by AI algorithms could be granted copyright protection. The thesis evaluates this question from the points of view of authorship and originality. In that sense, the question here is whether AI could be given legal personhood, and whether the AI could be considered as the original author of the work, or whether the original author was actually the person that programmed the AI algorithm. Due to the fact that “weak AI” relies on human factor in creation of content, “weak AI” will not be examined further in this thesis. Also, while “cognitive simulation” has shown great success in exploring the human mind, the methods

²³ “Artificial Intelligence” by B.J. Copeland, Encyclopedia Britannica, available at: <https://www.britannica.com/technology/artificial-intelligence#ref219078>, accessed on 08.01.2020

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid.

applied and the uses of the system are not in any relation to the topic of this thesis. As such, “cognitive simulation” will not be considered further in this thesis. Instead, for the purposes of this thesis, only strong AI will be examined in more detail due to its nature of being as independent as possible.

Indeed, while “strong AI” is thought by some to be nearly impossible to be achieved in the near future, it is also the most relevant system available in relation to the topic of this thesis.

Furthermore, while “strong AI” is considered to be independent and able to think for itself, some people like Noam Chomsky and Claude Shannon have suggested that the notion of “*thinking*” may vary by person to person and is therefore subjective. What exactly constitutes as “*thinking*?” Indeed, Chomsky has argued that the word “*think*” should not even be associated with machines due to the fact that doing so would be “arbitrary and pointless.”²⁸

One of the biggest problems of determining whether AI could be intelligent is that there is currently no viable way to determine the intelligence of artificial intelligence. While some scholars have proposed the Turing test to be used in determining the intelligence of an AI system, scholars like Claude Shannon and John McCarthy have pointed out that it could, in theory, be possible to program a machine to answer the questions of the interviewer plausibly by providing the program with all the possible answers and having it choose the most plausible answer out of all the available answers to each question. Doing so would certainly fool the interviewer, but it would by no means mean that the machine itself was intelligent.²⁹

Due to the fact that even the most sophisticated AI systems have been criticized as not being truly intelligent, it is nearly impossible to satisfy the critics. No objective criterion exists for determining the intelligence of a machine. Marvin Minsky has come up with their own solution to the current problem regarding AI and intelligence: intelligence should merely be considered as an indicator of solving problems that are yet not understood by us.³⁰ Indeed, the author of this thesis is inclined to agree with Minsky’s notion. “Strong AI” exists for as long as we can accept

²⁸ “Artificial Intelligence” by B.J. Copeland, Encyclopedia Britannica, available at: <https://www.britannica.com/technology/artificial-intelligence#ref219078>, accessed on 08.01.2020

²⁹ Ibid.

³⁰ Ibid.

the fact that the system comes with its own limitations. While sentient AI may not yet be possible, AI systems have become ever more sophisticated with the help of machine learning.

2.3. Artificial Intelligence and Machine Learning

Although sometimes used analogously, the terms Artificial Intelligence and Machine Learning are not synonyms. Instead, machine learning is a subset of artificial intelligence.³¹ Guadamuz notes that the concept of artificial intelligence is most typically associated with science-fiction.³² While AI has, indeed, been utilized in many books and movies over the past decades and even centuries, the real life applications of AI are considerably different. Similarly, the concept of machine learning is quite different to that which it is attributed to in certain fictitious works.³³

However, machine learning may not be that far-off its fictitious counterparts. As the name suggests, machine learning is the concept of algorithms being able to self-learn information relevant to their programming.³⁴ Due to this very fact, machine learning has been described as being more dynamic and more flexible than other concepts of artificial intelligence, thus meaning that machine learning requires less human input than various other methods involved in autonomous content-creation.³⁵

The fact that machine learning requires less human input in the creation of content is quite a big deal in relation to copyright protection. The threshold of originality, a concept discussed in further chapters of this thesis, typically demands the work to be original in order to receive copyright protection. Because programs utilizing machine learning are typically capable of such

³¹ “A.I. Wiki: A Beginner’s Guide to Important Topics in AI, Machine Learning, and Deep Learning,” available at: <https://pathmind.com/wiki/ai-vs-machine-learning-vs-deep-learning>, accessed on 22.03.2020

³² “Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works” by Andrés Guadamuz, p. 2 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 22.03.2020

³³ “A.I. Wiki: A Beginner’s Guide to Important Topics in AI, Machine Learning, and Deep Learning,” available at: <https://pathmind.com/wiki/ai-vs-machine-learning-vs-deep-learning>, accessed on 22.03.2020

³⁴ Ibid.

³⁵ Ibid.

originality, the granting of copyright to content generated or created by machine learning algorithms may be possible.³⁶

Machine learning utilizes artificial neural networks in order to function properly. These networks are akin to those found in humans and other living organism on the planet. The functioning is rather similar. However, as has been noted previously, the complex nature of these neural networks makes the work rather difficult.³⁷

However, in spite the difficult nature of the work, some successes have been recorded in relation to artificial neural networks. Guadamuz points out the Google project, dubbed “Deep Dream,” in which neural networks are utilized in the creation of “unique, bizarre and unsettling” images.³⁸ Explaining the technical details further, Deep Dream renders an already existing image mathematically by the use of machine learning and by mimicking biological neural networks. As such, the computer imitates human thought and determines how the image should be created.³⁹

*“Instead of exactly prescribing which feature we want the network to amplify, we can also let the network make that decision. In this case we simply feed the network an arbitrary image or photo and let the network analyze the picture. We then pick a layer and ask the network to enhance whatever it detected. Each layer of the network deals with features at a different level of abstraction, so the complexity of features we generate depends on which layer we choose to enhance.”*⁴⁰

The above is a quote of the researches explaining how artificial neural networks are utilized in Google’s Deep Dream project. Because the program is self-learning and able to create content without human input, one could argue that machine learning could very well be the future of AI-generated content, just like Guadamuz has predicted.⁴¹

³⁶ Guadamuz, p. 3

³⁷ “Artificial Intelligence” by B.J. Copeland, Encyclopedia Britannica, available at: <https://www.britannica.com/technology/artificial-intelligence#ref219078>, accessed on 22.03.2020

³⁸ Guadamuz, p. 3

³⁹ Ibid.

⁴⁰ “DeepDream – a code example for visualizing neural networks” by Alexander Mordvintsev, available at: <https://ai.googleblog.com/2015/07/deepdream-code-example-for-visualizing.html>, accessed on 22.03.2020

⁴¹ Guadamuz, p. 3

However, the notion that machine learning is “self-learning” may be misleading. Pathmind explains that the “learning” part actually means that the algorithms utilized by machine learning programs try to make optimizations in accordance with certain dimensions. For instance, the algorithms may attempt to minimize error or maximize the chances of their predictions being true. This basically means that machine learning systems continue on guessing the right answer in relation to the function of the system itself.⁴² By these standards, machine learning systems may actually be quite far away from being able to create original works without human interaction. Nevertheless, machine learning is an interesting and constantly developing concept that has been utilized in various different projects to this day.⁴³

⁴² “A.I. Wiki: A Beginner’s Guide to Important Topics in AI, Machine Learning, and Deep Learning,” available at: <https://pathmind.com/wiki/ai-vs-machine-learning-vs-deep-learning>, accessed on 22.03.2020

⁴³ Guadamuz, p. 3

3. JUSTIFICATION OF COPYRIGHT

Copyright law provides protection to works of audiovisual and other nature.⁴⁴ But what are the reasons behind copyright protection? This chapter will look into the most common reasons and justifications for and against copyright protection. The chapter will additionally outline certain limitations for copyright law.

3.1. Arguments for Copyright Protection

Several arguments exist for copyright protection. These include, among many others, the protection of value, marketplace competition, aesthetic merit, and the use of humans as proxy authors.⁴⁵ The aforementioned arguments have been brought forward by Daniel Gervais, a professor who has studied the justification of copyright rather extensively.

The argument regarding the protection of value is quite straightforward and simple: the idea is that, because creations are of some value to someone, the creations should be protected by copyright. Gervais argues that the reasoning behind the argument is flawed due to the fact that the law must not, and simply does not, always protect things of value.⁴⁶ However, other authors, such as Kalin Hristov, have argued that financial incentives are important for authors.⁴⁷

The second argument for copyright protection is that regarding marketplace competition. According to this view, machine-generated content should be granted copyright protection in order to avoid any discrepancies in the marketplace between human-created and machine-generated works. In other words, if machine-generated content would not receive copyright protection, they would become free of charge, at least according to the argument. The free nature of works, coupled with the fact that AI is able to generate a vast amount of content in a relatively short time period, could be rather devastating for the market of copyrighted content. Works that

⁴⁴ "Tekijänoikeus" by Harenko et al. p. 1

⁴⁵ "The Machine as Author" by Daniel Gervais, p. 13-17

⁴⁶ Ibid., p. 14

⁴⁷ "Artificial Intelligence and the Copyright Dilemma" by Kalin Hristov

were for sale would likely not be able to compete with works that were given out for free. Because of that, machine-generated content should be granted copyright protection in order to also protect human-created content.⁴⁸ However, one important problem emerges: who would receive the copyright to the work created by a machine? Would it be the owner of the software that created the work? Or would it be the software itself that received the copyright? The concept of authorship has been vastly debated in the past by legal scholars, such as Jane Ginsburg, Daniel Gervais, Andrés Guadamuz, and Kalin Hristov, to name a few... authorship is also an important aspect of this thesis, and it will be looked at in more detail in the next chapter.

The role of aesthetic merit has been considered as an argument for copyright protection. The idea behind the argument is that machine-generated content should be protected due to the fact that the quality or merit are not factors in determining the eligibility for copyright.⁴⁹ Gervais does not quite agree with the notion by stating that the principle behind the idea is utilized incorrectly. Gervais reasons that aesthetic merit has no merit in regards to the problem. The only thing that matters is whether authorship and originality exists. He goes on to explain that human authorship is a requirement for originality.⁵⁰

The last argument that will be examined here for copyright protection is that of humans as proxy authors. According to this argument, human owners of AI systems are also owners of the works the systems produce. If an AI creates a song, for example, the human that owns the AI becomes the owner of the song created by the AI.⁵¹ However, Gervais argues that because AI can make choices that are arguably too unforeseen by human actors, human beings cannot be considered as proxy authors of AI-generated content.⁵²

⁴⁸ “The Machine as Author” by Daniel Gervais, p. 15

⁴⁹ Ibid., p. 17

⁵⁰ Ibid.

⁵¹ Ibid., p. 19

⁵² Ibid, p. 21

3.2. Arguments against Copyright Protection

Several arguments exist against copyright protection. These include the humanness of authorship, the responsibilities that come with the rights granted, originality, and derivative works.⁵³ The arguments are further divided into further sections that will be looked at individually in the next following paragraphs.

According to Gervais, the humanness of authorship consists of the early figure of the author, the Statute of Anne and the early American law, the author's rights as human rights, and the evolution of author's rights in the U.S.⁵⁴ In the first part, Gervais writes about the early origins of an author, where the individual author emerged from and how it came to be.⁵⁵ The second part goes further into history and speaks of the relationship between the Statute of Anne and authorship.⁵⁶ In short, Gervais argues that human authorship has always been at the heart of copyright law by drawing examples from Lockean justifications for copyright and the individual nature of the authors at the time.⁵⁷

In the third part, the part concerning author's rights as human rights, Gervais introduces the Universal Declaration on Human Rights (hereinafter referred to as "UDHR") and notes that it:

*"Protects the moral and material interests of authors resulting from and scientific, literary or artistic production."*⁵⁸

By using the UDHR as an example, Gervais is basically stating that only humans can have human rights. Machines are therefore exempted from having such rights. However, Gervais does not expressly state that machines could not be considered authors or have copyright protection, at this point.⁵⁹

⁵³ "The Machine as Author" by Daniel Gervais, p. 23-48

⁵⁴ Ibid., p. 23-35

⁵⁵ Ibid., p. 25

⁵⁶ Ibid., p. 26

⁵⁷ Ibid., p. 29

⁵⁸ Ibid., p. 30

⁵⁹ Ibid., p. 31

Gervais uses the evolution of the author's rights in the United States as one of his argument against copyright protection.⁶⁰ In this part, Gervais introduces various different people, such as Thomas Jefferson and James Madison, in order to explain his argument. Once more, the human author is at the center of the matter. While some scholars have argued that nothing is genuinely creative or innovative anymore due to the fact that almost everything that can be done has already been done by somebody before, Gervais does not agree with the notion that the "death of the author" would justify machine-generated content to be copyrightable.⁶¹

Gervais brings up originality as one of his arguments against copyright protection. According to his views, machines cannot be original enough as they rely on predetermined choices and data in order to function and to generate content.⁶² In relation to originality, Gervais mentions the works made for hire doctrine. The idea, in this case, would be to grant a legal person the rights to the work created. For instance, if an AI created a painting, the rights would go to the legal entity, perhaps the AI itself.⁶³ However, Gervais also mentions that the doctrine is not really used for the aforementioned scenario. Instead, the work is often created by a human and the rights go to the corporate entity that the human author works for.⁶⁴

Lastly, the concept of derivative works is brought up as an argument against copyright protection. Gervais goes on to explain what types of works are derivative and what are not, and comes to the conclusion that AI-generated content is not derivative in nature due to the fact that AI "finds correlations and patterns to use as a matrix for its own production."⁶⁵ Furthermore, Gervais is also of the opinion that, because machines are not capable of creating works that would be original enough, and because originality is required for a derivative work to be copyrightable, machine-generated content is not regarded as derivative works.⁶⁶

One more thing that has been used as an argument against copyright protection is that in relation to the freedom of speech. Opponents of copyright have argued that copyright infringes upon the freedom of speech as it may limit creativity. However, proponents of copyright law have

⁶⁰ "The Machine as Author" by Daniel Gervais, p. 32

⁶¹ Ibid., p. 34

⁶² Ibid., p. 43

⁶³ Ibid., p. 46

⁶⁴ Ibid.

⁶⁵ Ibid., p. 50

⁶⁶ Ibid.

contended that, because the threshold for creativity is high enough, and because copyright law does not extend to information but rather the creation as a whole, copyright protection does not violate the freedom of speech.⁶⁷

3.3. Limitations for Copyright Protection

Copyright law has quite a few exceptions and limitations. These exceptions and limitations have been put in place for societal, cultural, and educational reasons.⁶⁸ The access to information and the freedom of speech are among the reasons for limiting copyright protection of creations.⁶⁹ Copyright does not extend to ideas, information or processes.⁷⁰ These exceptions and limitations have no bearing on whether the work in question was valuable or not. The amount of time invested on the creation of the work in question does not matter, either.⁷¹

When it comes to copyright law, exceptions and limitations are by no means synonymous. These two terms mean different things in the context of copyright law. Exceptions allow persons to commit the permitted act in question without imposing any payments on that person. Limitations allow the use, but they also require payment. The payment is typically determined by compulsory licensing systems set up by government authorities.⁷²

Some of the most typical exceptions and limitations include the right of fair quotation, the ability to make copies of works for the purposes of study and research, the making of parody or satire, the use of copyrighted material in news reports, the exhaustion of rights, and so on.⁷³ It should, however, be noted that different countries allow different exceptions and limitations in their national copyright laws.⁷⁴

⁶⁷ “Tekijänoikeus” by Harenko et al, p. 3

⁶⁸ “Tekijänoikeus” by Harenko et al, p. 1

⁶⁹ Ibid.

⁷⁰ “Overview of Copyright Law,” by Jane Ginsburg, p. 23

⁷¹ Ibid.

⁷² Ibid.

⁷³ “Justifications for Copyright Limitations & Exceptions,” by Pamela Samuelson, p. 11

⁷⁴ Ibid.

The right of fair quotation is among one of the most fundamental limitations of copyright protection. According to this limitation, a person has the ability to use copyright protected material in an entire new context, as part of a new work or creation. This practice is most commonly known as quotation of work. There are several different ways of making quotations. For instance, one may take an exact excerpt from the original work and use it in their own work. One could also refer to the original work in their own work by discussing the original work or one of its parts in the new work in question. However, one may not use a quotation in order to distort or change the original meaning of the original work.⁷⁵

The right of fair quotation serves the interests of the public. For example, in the making of research papers, it would be practically impossible to request a permit from the original creator of a study paper in order to quote a part of the work or refer to the work's scientific results. Another justification for the right of quotation is the ability to use already existing material as part of new material or research, and communicate the details of the original material to the public. If such a practice was forbidden, the results of a minor, yet important, study would likely never receive any wider audience. Furthermore, it is important to question and criticize the results of scientific studies for the furtherance of science.⁷⁶

The ability to make copies of works typically allows for making copies for private use and educational purposes.⁷⁷ International copyright treaties have come up with the requirement of satisfying the “3-step test” of the Berne Convention when creating exceptions and limitations in regards to the reproduction right. Article 10 of the WIPO Copyright Treaty states the following:

*“It shall be a matter for legislation in the countries of the Union to permit the reproduction of such works in certain special cases, provided that such reproduction does not conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author.”*⁷⁸

⁷⁵ Harenko et al., p. 199

⁷⁶ Ibid., p. 200

⁷⁷ Ginsburg, p. 23

⁷⁸ Ibid.

The United States exemption for retransmissions of public performances of radio and television broadcasts in different venues was contested in the WTO. A dispute resolution panel was set up, and it was eventually decided in regards to the matter that national legislatures must ensure the following:

- “(1) That the exemption is limited to a narrow and specifically defined class of uses [“certain special cases”];*
- (2) That the exempted use does not compete with an actual or potential source of economic gain from the ways rightholders normally exercise rights under copyright [“conflict with a normal exploitation of the work”]; and*
- (3) That the exempted use does not unreasonably harm rightholder interests that are justifiable in light of general copyright objectives [“not unreasonably prejudice the legitimate interests of the rightholder”]; the unreasonableness of the harm may be allayed if the member state imposes a compensation-ensuring compulsory license in lieu of an outright exemption.”⁷⁹*

The WTO Panel requires that all steps in the process are satisfied individually. In other words, in order to receive an exemption in regards to the matter, all of the above steps must be true. Otherwise, no exemption shall be provided. Understandably, the Panel’s requirement of satisfying all of the three steps has received some criticism. “European Copyright Code” by the Wittem Project leaves the first step completely out:

“Any other use that is comparable to the uses enumerated in article 5.1 to 5.4(1) [Uses with minimal economic significance; Uses for the purpose of freedom of expression and information; Uses Permitted to Promote Social, Political and Cultural Objectives; Uses for the purpose of enhancing competition (advertising and reverse engineering)] is permitted provided that the corresponding requirements of the relevant limitation are met and the use does not conflict with the normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author or rightholder, taking account of the legitimate interests of third parties.”⁸⁰

⁷⁹ Ginsburg, p. 24

⁸⁰ Ibid

The World Intellectual Property Organization Copyright Treaty (hereinafter referred to as “WCT”) is yet another international copyright treaty that has attempted to harmonize copyright law between different countries. Article 11 of the WCT comes up with its own limitation by requiring protection for technological measures that:

“Are not authorized by the authors concerned or permitted by law.”⁸¹

As such, a technological measure that hinders legal use may be circumvented. However, there is a problem with the law in question. The technological measure could also hinder unlawful uses. In those cases, it is possible that the measure may not be able to distinguish between users making lawful or unlawful uses.⁸²

Both, the United States and the European Union, have come up with different solutions to the aforementioned problem. The US Copyright Office utilizes triennial rulemaking, which provides an approach to accommodate copyright exceptions. The EU Information Society Directive provides another way of dealing with the issue: the Directive requires EU member states to take appropriate measures to ensure that rightholders provide the beneficiary with the means to benefit from that exception or limitation, to the extent necessary to benefit from that exception or limitation, in accordance with certain exceptions and limitations listed in the Directive. Furthermore, the beneficiary should also have legal access to the protected work or subject-matter concerned.⁸³

As has been demonstrated above, the US and the EU systems differ quite a bit from each other. The US system utilizes an approach where the burden is placed on the beneficiaries claiming exemption in order to establish its necessity. Conversely, the EU system relies on the rightholders in order to ensure that lawful uses continue to be available.⁸⁴

⁸¹ Ginsburg, p. 28

⁸² Ibid.

⁸³ Ibid.

⁸⁴ Ibid.

4. ARTIFICIAL INTELLIGENCE AS AN AUTHOR

Millions of works of audiovisual nature have been created in the past years by artificial intelligence algorithms. These works include literature, music, paintings, and even newspaper articles.⁸⁵ However, important questions emerge: who is to be considered as the author of AI-generated works? Who or what entity is to be given the rights to works created by AI? Or should copyright protection be completely excluded from AI-generated content? This chapter of the thesis will discuss the relationship between artificial intelligence and authorship, and what the implications may be for granting authorship to AI. This chapter will further evaluate the concept of originality in relation to AI authorship and copyright.

4.1. Issues relating to Authorship

The relationship between artificial intelligence and authorship is a tricky one. Considering the AI as an author comes with several issues, especially when copyright law is thrown into the mix. For instance, the lack of financial or other type of incentives (e.g. happiness) is always present in AI, unless if the aforementioned incentives were programmed into the machine. Nevertheless, machines will create content solely based on their programming. They do not truly care for money or making other people or themselves happy. As a matter of fact, they do not care about anything that humans would care for. Article I, Section 8, Clause 8 of the U.S. Constitution, which is also known as the Intellectual Property Clause, grants the following to the Congress:

*“To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”*⁸⁶

⁸⁵ A.I. May Have Written This Article. But Is that Such a Bad Thing? By Neil Sahota, Forbes, available at: <https://www.forbes.com/sites/cognitiveworld/2018/09/16/did-ai-write-this-article/#a9cb05f18859>, accessed on 13.01.2020

⁸⁶ “Intellectual Property Clause,” Cornell Law School, available at: https://www.law.cornell.edu/wex/intellectual_property_clause, accessed on 13.01.2020

In that sense, it could be construed that the idea of monetization has been included in the U.S. Constitution due to the fact that creative works are to be protected under it. If authors had no need to monetize their works, the works would likely not need any protection, either.⁸⁷

Another issue in relation to AI authorship is that of originality. For example, in order to create a software that produced visual works, such as images, one could input thousands upon thousands of pictures into the program and have it evaluate the pictures. After that, the program could be commanded to create similar pictures based upon the ones inputted into the programming of the machine, but avoid creating the exact same type of pictures as included in the program.

Potentially hundreds of thousands of images could be created, some of which would likely be very similar to the pictures that had been included in the program, but different just enough to warrant originality of the content.⁸⁸

The third issue examined in this thesis is that of copyright duration. The duration of copyright is typically long, usually lasting for the author's age and more. In some countries, copyright protection will span over a century after the author's demise.⁸⁹ In this regard, Kalin Hristov has pointed out that AI is technically perpetual in nature. In that sense, if the modern rules of copyright law were applied to AI-generated content, the copyright protection of AI-generated works would effectively never cease, and the works created by AI software would practically retain their copyright protection forever.⁹⁰

The fourth issue in relation to AI authorship has to do with the fact that AI is technically able to create vast amounts of content in a very short time period, without any physical restrictions that are known to humans, apart from perhaps lack of electricity. Because of that, machines are able to generate content tirelessly and effortlessly, without having to eat, sleep or take any breaks whatsoever. Also, due to the fact that computers are so sophisticated today, and constantly improving, the time it takes to create masterpieces worthy of Beethoven's symphonies or Rembrandt's paintings is minimal.⁹¹

⁸⁷ "Inside Views: Copyright and Artificial Intelligence" by Edward Klaris, Intellectual Property Watch, available at: <http://www.ip-watch.org/2018/01/30/copyright-artificial-intelligence/>, accessed on 13.01.2020

⁸⁸ Ibid.

⁸⁹ Ibid.

⁹⁰ "Artificial Intelligence and the Copyright Dilemma" by Kalin Hristov, p. 450

⁹¹ "Inside Views: Copyright and Artificial Intelligence" by Edward Klaris, Intellectual Property Watch, available at: <http://www.ip-watch.org/2018/01/30/copyright-artificial-intelligence/>, accessed on 13.01.2020

In addition to Hristov, several other scholars have written about the issues regarding authorship in relation to AI-generated content. These include Daniel Gervais, Jane Ginsburg, Pamela Samuelson, and Timothy Butler, to name a few.

In relation to the first issue, Gervais has come up with several compelling counter-arguments. The first issue entails that works that have some value to somebody should be protected by copyright. However, Gervais argues that the reasoning provided is erroneous in nature. That is because, according to Gervais, the reasoning is:

*“Based on a vague restitutionary (or “reap/sow”) impulse that some value was misappropriated.”*⁹²

Gervais makes the notion that free riding is not against the law. He also explains that the law does not have to protect everything that may or may not have value. Arguably, there are some good examples of why free riding should be allowed in relation to copyright law. For instance, some countries have made exceptions to copyright law in regards to parodies and satires. These can sometimes prove to be quite fruitful works, and great additions to the public domain.⁹³

The issue in relation to originality is one of the central issues in regards to this thesis. The concept of originality is important in determining whether a creation could be granted copyright protection. While the threshold of originality varies from country to country, the concept itself is typically known all over the world.⁹⁴ Several scholars have examined the concept of originality in relation to machine-generated content and their ability to be protected by copyright. While the concept itself is examined in subsequent chapters of this thesis, this part will focus on the concept of originality in relation to the authorship of content created by autonomous machines, or artificial intelligence algorithms and machine learning.

The issue regarding originality is in many ways similar to the fourth issue that has been examined above. The fourth issue supposes that AI could create vast amounts of works with very little effort. If all of those works were deemed to be original and creative, and if those works were granted copyright protection, it could lead to a situation where the amount of works

⁹² Gervais, p. 14

⁹³ Ibid., p. 15

⁹⁴ “Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?” by Alen-Savikko et al, Lakimies, p. 979

available to be created would be exhausted by autonomous content creators. However, the aforementioned is only true if content created by AI were to be deemed original enough to warrant copyright protection to it.

Alen-Savikko has pointed out that, while there are quite a few differences in the different legal systems, especially between Europe and the United States, in relation to copyright law and the concept of originality, the differences are rather mild. However, because these two aforementioned continents protect different things with their copyright, with the EU placing the protection on the author and the US placing the protection on the work itself, there could be some drastic differences in relation to content created by autonomous machines, and the protection of that content, between the two continents.⁹⁵ These differences will be looked at in more detail in the subsequent chapters of this thesis.

The duration of copyright is an important factor in relation to content generated by autonomous robots. The fact that robots are technically perpetual in nature could pose some challenges to determining the proper duration for content generated by AI algorithms, provided that machine-generated works could even be granted copyright protection in the first place. The duration of copyright in different countries will be examined in more detail in the forthcoming chapters, but the concept of copyright duration in relation to authorship is examined here.

As Hristov has pointed out, human beings are more limited than machines in the sense that humans typically have shorter lifespans. The duration of copyright is already quite high, with the Berne Convention setting the duration at 50 years after the original author's death. Some countries have also increased their copyright durations.⁹⁶ As autonomous machines do not age in the same way that humans do, and because autonomous machines cannot really pass away in the same way that humans do, AI machines are technically undying. This factor proposes a challenge for the way we currently understand copyright duration.⁹⁷

Hristov has come up with a solution to the problem in relation to copyright duration in regards to content created by autonomous machines. He proposes that the employee-employer relationship in the made for hire doctrine were reinterpreted in order to account for AI-generated content. In

⁹⁵ Alen-Savikko, p. 981

⁹⁶ "Overview of Copyright Law" by Jane Ginsburg, p. 13

⁹⁷ Kalin Hristov, p. 450

other words, the ownership of the work should be transferred from the machine to its employer.⁹⁸ Doing so would effectively remove the death requirement from the ceasing of copyright protection, as the duration for works made for hire is different from the standard duration of copyright. In the former case, the duration is determined by the date of publication and the date of creation of the work itself, rather than the lifespan of the author.⁹⁹

4.2. Who owns the Copyright?

The question as to whether artificial intelligence, a non-living entity with human-like, artificially created intelligence, could retain the rights to works created by it, is a rather peculiar question in and of itself. While copyright holders do not always have to be natural persons, there are plenty of other things that should be considered in regards to the question. For instance, jurisdiction plays an important role regarding copyright law. While some jurisdictions, such as the United Kingdom, allow companies to own copyright (known as *corporate authorship*)¹⁰⁰, some other places may not have such provisions in their copyright law.¹⁰¹ Furthermore, the duration of the copyright is of equal importance.

While works protected under corporate authorship may in some countries receive shorter copyright durations, countries with more ambiguous stances on copyright issues may not differentiate between copyrights owned by natural and legal persons. Also, in some countries, works created under corporate authorship may actually receive longer copyright durations. For instance, in the United States, the term of copyright is the life of the author plus 70 years. However, if the author is set to be a legal person (e.g. a company), the copyright duration will be 95 years. As such, choosing the most favorable option for the copyright may actually depend on the age and well-being of the original author of the work.¹⁰²

⁹⁸ Ibid.

⁹⁹ Ibid., p. 451

¹⁰⁰ Article by Edward Klaris on Inside Views.

¹⁰¹ “Act on Copyright and Related Rights,” Section 7, available at: https://www.gesetze-im-internet.de/englisch_urhg/englisch_urhg.html, accessed on 13.01.2020

¹⁰² “Who Owns Copyright? My Company or Me?” by Kathryn Goldman, Creative Law Center, available at: <https://creativelawcenter.com/who-owns-copyright/>, accessed on 13.01.2020

Approaching the question as to whether AI could own the rights to copyrighted material from the point of view of corporate authorship may not actually be the most sophisticated method. Not only because corporate authorship is not recognized in all countries, but also because, even if the country in question recognized corporate authorship and granted copyright to legal persons, the country may still not grant copyright to content generated by machines. This is especially true in the case of the United States, where U.S. Copyright Office has published a “Compendium of Best Practices,” according to which “the office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author.”¹⁰³ Instead, works created with no direct human intervention end up into the public domain by default in the United States.¹⁰⁴ However, the statement holds that works created with creative input and human intervention are granted copyright protection. Perhaps the fact that human beings are typically the programmers of artificial intelligence systems could constitute “human intervention?” At this point in time, however, the current case law shows that this is not the case in the United States.¹⁰⁵

Regardless of whether the U.S. Copyright Office allowed machine-generated content to be copyrightable, we are still not sure whether the copyright would actually be granted to the machine itself or the owner of the machine. Kalin Hristov argued in his book “*Artificial Intelligence and the Copyright Dilemma*” that if the U.S. Copyright Office continued with their current stance of not granting copyright to machine-generated works, the scientists and programmers working on AI would become disincentivized and thus not have enough motivation to work on AI-related projects.¹⁰⁶ However, in spite of Hristov’s statements, the use of AI has risen dramatically over the past few years. The global AI industry revenue is expected to hit as high as 97.9 billion USD by 2023.¹⁰⁷ In that sense, in spite of the fact that AI is not directly granted copyright in certain countries, the use of AI is still very relevant to businesses in helping

¹⁰³ “Artificial Intelligence and the Copyright Dilemma” by Kalin Hristov, p. 436

¹⁰⁴ Ibid.

¹⁰⁵ Ibid., p. 438

¹⁰⁶ Ibid.

¹⁰⁷ “Artificial Intelligence (AI) worldwide – Statistics & Facts” by Shanhong Liu, Statista, available at: <https://www.statista.com/topics/3104/artificial-intelligence-ai-worldwide/>, accessed on 16.01.2020

them grow and cutting their costs. Indeed, in a 2019 survey, 29.5% of small and medium-sized business owners had spoken in favor of using various AI-related technologies.¹⁰⁸

When it comes to copyright ownership in relation to machine-generated content, there are several options available in regards to who the owner of the content could be. These options include the programmer of the machine, the user, the owner of the machine, the machine itself, joint authorship, a fictional human author, and lastly, nobody. These options will be looked at in more detail below in order to determine who could best own AI-generated content.

Programmers of the machine are the persons that have created the autonomous machine in question. One of the main reasons as to why programmers should be considered as owners of machine-generated content is because the programmers are essentially the persons who created the machine itself. Without the direct input of the programmer, the machine itself could not have been created. In addition, creating autonomous machines that are capable of producing their own content is a very demanding task, both intellectually and time-wise. In that sense, it would be fair to provide the programmer with some reward for their work.¹⁰⁹

Furthermore, when it comes to the relationship between the programmer and the machine, AI machines typically follow the commands of the programmer. This is another argument in support of the programmer being the owner of the content generated by an autonomous machine. While the end-user may provide commands to the machine in order to create content, the programmer actually made this possible. The end-user relies on the programming of the machine, as does the machine itself. Also, while the programmer may allow their programs to be used for non-commercial purposes, in the event that the end-user tried to make money out of the program or its creations, the programmer may have some objections to the end-user's monetization attempts.¹¹⁰

However, there are also several counter-arguments to granting the ownership of machine-generated content to the programmer. The first counter-argument is that the programmer has a choice in regards to publishing and distributing their program. The programmer can leave the

¹⁰⁸ "How is Artificial Intelligence Revolutionizing Small Businesses?" by Vipul Srivastav, available at: <https://www.entrepreneur.com/article/341976>, accessed on: 16.01.2020

¹⁰⁹ "Allocating Ownership Rights in Computer-Generated Works," by Pamela Samuelson, p. 1205

¹¹⁰ Ibid. p. 1206

program unpublished and generate content with it by him or herself, and thereafter obtain copyright to the works generated by the program. By doing so, the programmer would not be able to monetize on the program itself, but they could potentially make money out of the content generated by the machine.¹¹¹

Furthermore, if the programmer is distributing their program for a fee, it is only fair that the end-user would be able to benefit from the content generated by the program, too. After all, generating content is the prime purpose of the program in question. If the end-user was not able to monetize on the content generated by the machine, there would be little to no point in purchasing the program itself.¹¹²

Perhaps one of the most compelling counter-arguments for granting the ownership to the programmer is that, if the programmer was granted the rights to all works generated by their program, the programmer would be over-rewarded. Although the programmer may have programmed the machine in question, the programmer is not likely able to predict all the content the machine could generate. Furthermore, it would likely be difficult to enforce the programmer's rights due to the fact that the end-users may not always be willing to inform which content was generated by the particular programmer's machine. Distinguishing machine-generated content from human-created content could prove rather difficult.¹¹³

The user of the machine is another candidate for the ownership of machine-generated content. The user is the person who utilizes the machine in question and commands it to make a new creation, perhaps based on previously created material, such as images. However, in cases where the user's input is minimal, it may be more difficult to attribute authorship of the work to the user.¹¹⁴

There are some reasons as to why users could be granted ownership to machine-generated content. The first reason is that the user is considered as the instrument of fixation for the work in question. In other words, the user is the person who caused the work to be created. If it were

¹¹¹ Samuelson, p. 1207

¹¹² Ibid.

¹¹³ Ibid., p. 1208

¹¹⁴ Ibid., p. 1201

not for the user's input, the work in question would also not exist. The person who has "fixed" the work is most typically considered as the author of the work, at least in the United States.¹¹⁵

Another reason that supports the user being the owner of the content is that the threshold of originality is typically quite low. Samuelson explains that a person who records a live musical performance is considered as the author of the recording, in spite of the fact that the person recording the performance had nothing to do with the actual performance. All it takes is a click of a button to "generate" the content.¹¹⁶ Similarly, a person inputting images to a computer software and having that software generate a completely new image based on the images inputted into the program could grant authorship to the person.¹¹⁷

Assuming that the user would have purchased a license to the program that generates content autonomously, it would make sense to allow that user to monetize on the content generated by the machine. One would also assume that the person who purchased the program would also want to generate content that they could sell, in return for their investment into the product.¹¹⁸ Additionally, in some cases, the user may have to do more than just press a button or issue a simple command to the machine in order for it to generate new and original content. The content may also become quite valuable.¹¹⁹

There are some counter-arguments to granting the rights of the work to the user. Hristov has opined that users do not generally contribute to the initial development of AI. He has made the argument that granting ownership to users instead of the programmers could have some negative consequences to the development of artificial intelligence and machine learning projects. For instance, if users were granted copyright ownership to the content generated by programs, the programmer or the owner of the program could limit the use of AI by third parties. This would allow the programmers to retain their copyright to the works created by their algorithms. However, it would also hinder the development of AI. This could, in turn, lead to a decline in AI-generated works.¹²⁰

¹¹⁵ Samuelson, p. 1202

¹¹⁶ Ibid., p. 1202-1203

¹¹⁷ Ibid. p. 1203

¹¹⁸ Ibid.

¹¹⁹ Ibid., p. 1204

¹²⁰ Hristov, p. 444-445

The owner of the machine could also serve as a potential candidate for the owner of machine-generated content. This idea is based on the view that the owner is the owner of a company, for instance, and the company would utilize the machine in its operations. In that sense, the content generated by the machine would be considered as works made for hire. The made for hire doctrine is as follows:

*“(If) a work is made for hire, an employer is considered the author even if an employee actually created the work. The employer can be a firm, an organization, or an individual.”*¹²¹

Hristov has proposed to redefine the work made for hire doctrine in order to better suit the needs of AI-generated content protection. He suggests that the terms “*employer*” and “*employee*” were interpreted a little differently to also mean autonomous robots, and not just living beings. Hristov explains that an “*employer*” could be regarded as a person that renders the services of another entity in order to accomplish its goal. The owner of the machine in question would be considered as the employer in this case as they utilize the machine in order to generate new content. Hristov further reasons that by reinterpreting the doctrine in order to take AI-generated content into account, the current issue of machine-generated content going directly into the public domain would be solved.¹²²

The machine itself could also be considered as the owner of the content it produces. Several scholars have been in favor of the idea of allowing machines to own their own creations by allowing non-humans to be considered as authors. For example, Ryan Abbott has opined that non-human authors should be granted legal rights in order to promote the development of artificial intelligence.¹²³

In a similar fashion, Andrew Wu has expressed his views regarding AI authorship. He uses a fictional character named “*Data*” from a science-fiction television series called “*Star Trek: The Next Generation*.” The character is a humanoid robot that is capable of producing his own artwork and other such content, completely independently. Wu makes the following arguments about granting AI authorship:

¹²¹ Ibid, p. 445-446

¹²² Ibid., p. 446-447

¹²³ “I think, Therefore I Invent: Creative Computers and the Future of Patent Law,” by Ryan Abbott, p. 1098-1099

First, the programmer of the artificial intelligence software fails to comply with the fixation requirement due to the fact that the Data's art work is not repeatable or predictable. Second, the Data produces its own content independently, without any human interaction. Third, as the user is missing, joint ownership is not applicable. Fourth, the requirements of section 102 are met by works that have been generated by Data. These include works like sculptures and paintings that would meet the requirements of fixation and originality for Data in the same fashion as they would meet these for human authors. Fifth, the artificial intelligence software is capable of determining whether to produce subsequent works or not. As such, the Copyright Office or courts should provide copyright protection to the content generated by the AI. This would, in turn, encourage and motivate the AI to create works of art in the future, as well.¹²⁴

As such, Abbott and Wu seem to share the notion that allowing autonomous machines to have ownership over the content created by them would benefit the future of AI-generated content. However, the idea that machines were granted rights over their works has sparked a lot of criticism and controversy among scholars. Hristov has stated that granting AI authorship rights could lead to uncertain legal challenges and even systemic abuse. First of all, non-humans are not natural persons and are thus not considered to be legally responsible for their actions. Second of all, Hristov argues that if authorship was redefined to include non-humans as authors, the legal system would be undermined. This could, in turn, lead to further uncertainty.¹²⁵

Joint authorship is yet another interesting solution to the current problem of who should be considered as the author and owner of the works generated by autonomous machines. In this scenario, both the user and the programmer would be considered as joint authors of the works created by AI systems.¹²⁶ However, as Samuelson points out, the current legal system would not likely allow for the joint authorship of users and programmers in the case of autonomous content creation, at least in the United States. This is because a "*joint work*" is defined as follows:

*"A work prepared by two or more authors with the intention that their contributions be merged into inseparable or interdependent parts of a unitary whole."*¹²⁷

¹²⁴ "From Video Games to Artificial Intelligence: Assigning Copyright Ownership to Works Generated by Increasingly Sophisticated Computer Programs," by Andrew Wu, p. 176

¹²⁵ Hristov, p. 441

¹²⁶ Samuelson, p. 1221

¹²⁷ Samuelson, p. 1222

Due to the above definition, when it comes to computer-generated content, it could be rather difficult to establish a joint intent between the programmer and the user due to possible vast distances between the two, for instance.¹²⁸ Furthermore, joint authorship does not consolidate ownership rights. It actually fractionates them between the owners. In that sense, if there are multiple programmers and users involved in the programming and using the software in question, all of the individuals have to be taken into consideration for ownership rights.¹²⁹ In addition, in a typical joint work, the persons working on the project are typically in close contact with each other as they collaborate on their project. However, in the case of computer-generated content, it is highly likely that the programmer and the user will never even meet each other. The programmer writes the program, which is later sold to the user, and the user thereafter utilizes the program to generate content from it.¹³⁰

Wu has been a little more optimistic about considering the user and the programmer as joint authors. He uses a virtual reality program where the user's utilization of a magic wand produces a "musical sculpture." Wu's explanation regarding the concept is outlined below.

First, several features of the program's output are predictable and repeatable. These include certain music tones and the appearance of the trail of bubbles in the visual display of Wu's example program. Second, the user has choice over the individual notes and bubbles made with the wand. These would meet the requirements of minimal creativity. Third, both the user and the programmer consider their contributions to the work as parts of a unitary whole. As such, they have a clear intention of being joint authors.¹³¹

As per Wu's hypothesis, the user and the programmer actually do collaborate with each other on the project that they work on. Both parties have a part in the creation generated by the program.¹³²

Fictional human author is another hypothetical candidate for the owner of machine-generated content. The fictional human author theory was originally proposed by Timothy L. Butler. According to Butler, in the case of machine-generated content, the courts should assume that the

¹²⁸ Ibid.

¹²⁹ Ibid.

¹³⁰ Ibid., p. 1223

¹³¹ Wu p. 175-176

¹³² Wu p. 176

content was created by a fictional human author and thus provide the appropriate rights associated with the creation of the work to the owner of the AI software copyrights, the problem-specifier or the computer owner, either individually, jointly or in part.¹³³

Butler argues that his proposal has several advantages. First of all, the court deciding over the case does not have to distinguish between a human author and a non-human author, because the existence of a human author is presumed. Second of all, because the author is considered to be a human being in a legal sense, some contractual problems could be avoided. Third of all, adopting Butler's views could help expand copyright law further. Fourth of all, as machines were considered to be fictional human authors, the content created by them would actually be eligible for copyright protection. This could further incentivize companies and programmers to develop ever more sophisticated AI systems. Butler's fifth argument is that, by adopting his idea, the courts would no longer have to think about the philosophical questions in regards to allowing computers legal rights.¹³⁴

However, Butler's ideas have received some criticism. Evan Farr has stated that the theory proposed by Butler would actually increase the amount of litigation. The number of court cases stemming from the idea could be overwhelming on the legal system. Additionally, Butler has not really specified who would begin the necessary proceedings in relation to litigation. The enforcement of copyright is equally important in relation to copyright protection. With no feasible way to look after one's own rights, it could be argued that there are no rights involved.¹³⁵

The last option that will be looked at in this thesis is that nobody should be granted copyright protection in regards to machine-generated content. According to this view, the works created by autonomous machines would simply go into the public domain. Samuelson writes that one of the fundamental aspects of the copyright system is that creators are awarded exclusive rights to their creations in order to motivate them. As robots do not require such motivation to be creative, what would the point of awarding them with copyright protection be?¹³⁶

¹³³ Butler, p. 744

¹³⁴ Ibid., p. 145

¹³⁵ "Copyrightability of Computer-Generated Works," by Evan Farr, p. 79

¹³⁶ Samuelson, p. 1224

When it comes to economic incentives of creators, such as programmers, one could argue that the programmer is already being incentivized by selling or licensing the program that is capable of generating content. The user is also not left at a disadvantage. The user will be allowed to generate content with the machine that they have purchased and potentially utilize the raw data stemming from the program in creating something that does have commercial value, and which the user will be able to have rights to.¹³⁷

However, the idea that nobody should receive the rights to machine-generated content does not come without criticism. Certain scholars have insisted that rights should always be granted to someone or something. In addition, it has been argued that it would be rather difficult to prove whether the content in question was solely produced by a machine or whether it had some human input in its creation. Differentiating between the two could prove to be impossible.¹³⁸

Indeed, money is an important factor, and a very good motivator, for most people. A person could easily lie or fail to disclose that their creation had been generated by an autonomous machine. The person could alternatively make some change to the work in order to add human input into it, without necessarily improving the work in any way. Nevertheless, the person would be more interested in receiving the rights to the product rather than have it fall into the public domain for everyone to utilize freely.¹³⁹

¹³⁷ Ibid., p. 1225

¹³⁸ Ibid., p. 1226

¹³⁹ Ibid., p. 1227

4.3. The Importance of Originality

The concept of originality is understood as one of the most important aspects of copyright protection.¹⁴⁰ Originality is a factor typically attributed to humans, as human beings are capable of creating original ideas by using their own minds.¹⁴¹ But what if machines could become as creative and as original as humans are? Several scholars, such as Andrés Guadamuz, Timothy L. Butler, and Tianxiang He, to name a few, have examined the concept of originality in relation to works created or generated by machines.^{142 143 144}

Guadamuz argues that due to the fact that originality is associated with humans, and copyright is geared towards protecting human-created content, non-human intellectual property rights do not exist.¹⁴⁵ Guadamuz continues with the notion that the author of the work must be a person and not a machine. However, Guadamuz does provide a little bit of leniency on the matter by bringing up “*The Next Rembrandt*,” a joint-collaboration project by several Dutch museums, research institutions and Microsoft that shook the waves some years back in the fields of machine learning and copyright law.¹⁴⁶ The project utilized machine learning in analyzing the works of painter Rembrandt Harmenszoon van Rijn and created its own painting based on all the previous works. While Rembrandt’s works are already in the public domain, and the creators of *The Next Rembrandt* have not sought any intellectual property rights to their work, the project is nevertheless quite astounding from a technical and a legal perspective, as Guadamuz mentions.¹⁴⁷

Guadamuz also points out that the project may even challenge the way we understand originality in the first place. As the algorithms behind *The Next Rembrandt* are so sophisticated, they are able to come up with their own creative solutions in regards to the works created by them. This

¹⁴⁰ Guadamuz, p. 6

¹⁴¹ Ibid.

¹⁴² Ibid.

¹⁴³ “Can a Computer be an Author? Copyright Aspects of Artificial Intelligence” by Timothy L. Butler

¹⁴⁴ “The Concept of Originality in the Copyright Issue of AI-generated Works in China” by Tianxiang He, available at: <https://www.qmul.ac.uk/euplant/blog/items/the-concept-of-originality-in-the-copyright-issue-of-ai-generated-works-in-china.html>, accessed on 20.01.2020

¹⁴⁵ Guadamuz, p. 6

¹⁴⁶ Ibid.

¹⁴⁷ Ibid.

means that the algorithm no longer relies solely on human input or programming. The machine is more than a mere tool that follows the directions and commands of its human programmers. It has been given the ability to make its own estimations in regards to what may be the most aesthetically pleasing choice.¹⁴⁸

Tianxiang He of the City University of Hong Kong has explored the idea of originality from the points of view of the Chinese and the American legal systems. He has introduced two different standards in relation to originality: subjective and objective.¹⁴⁹ The subjective standard focuses on the process of creation in terms of copyright protection, whereas the objective standard looks at the end result.¹⁵⁰ In terms of AI-generated content, He argues that the subjective standard should be utilized as it provides the ability to focus on how the specific work was created by the program.¹⁵¹ He is of the idea that the creative process should always include some sort of intention of the author of the work. In that sense, works created by accident should apparently not be granted copyright protection in He's opinion. He writes that:

*“If we merely base on the end product to determine originality, then we may not be able to distinguish between the work of nature and the work of humans, if no evidence concerning the creative process can be garnered.”*¹⁵²

He further argues that, because the quality of AI-generated content is so good, it can be very misleading in terms of originality if the creative process is not considered.¹⁵³ However, in spite of He's criticism, He also mentions that AI could one day become sophisticated enough to be able to generate truly original content, in which case the content could very well be copyright protected.¹⁵⁴ In that sense, both He and Guadamuz seem to share similar ideas regarding the subject.

¹⁴⁸ Guadamuz, p. 2 and 6

¹⁴⁹ “The Concept of Originality in the Copyright Issue of AI-generated Works in China” by Tianxiang He, available at: <https://www.qmul.ac.uk/euplant/blog/items/the-concept-of-originality-in-the-copyright-issue-of-ai-generated-works-in-china.html>, accessed on 20.01.2020

¹⁵⁰ Ibid.

¹⁵¹ Ibid.

¹⁵² Ibid.

¹⁵³ Ibid.

¹⁵⁴ Ibid.

Timothy L. Butler examined the idea of originality in regards to the relationship between artificial intelligence and copyright protection almost four decades ago, back in 1982.¹⁵⁵ In his writing, Butler brings up the concept of derivative works.¹⁵⁶ In some instances, it was argued that AI-generated works as essentially derivative works and, as such, the copyright should belong to the owner of the software that created the content.¹⁵⁷ However, Butler argues that because the work generated through AI algorithms is not actually “based upon” or derived from the program itself, the work cannot be considered to be derivative in nature.¹⁵⁸ Butler notes the following:

*“In AI software applications, the work product bears little or no resemblance to the underlying program code which created it. Thus, it is not ‘derivative’ in a copyright sense.”*¹⁵⁹

In that sense, Butler argues that machine-generated content cannot be considered to be derivative works due to the fact that AI-generated content does not fall within the frame of the concept.¹⁶⁰ In an attempt to provide a solution to the problem, Butler introduces the concept of “*The Fictional Human Author*” that would be attributed to the program or machine that generated the original content.¹⁶¹ According to this view, the rights to the product would go to the owner or owners of the program that generated the content. Butler further opines that machines should not be allowed to steal the concepts of originality and creativity from humans in his reasoning.¹⁶²

In relation to Butler’s solution, he came up with the following interpretation to Section 102 of the U.S. Copyright Act:

*“In determining the copyrightability of expressions wholly or partly produced by computer software and which are apparently thoughtful or indistinguishable from those produced by a human author, human authorship will be presumed and ‘authorship’ and ‘originality’ requirements of this Act will be deemed satisfied.”*¹⁶³

¹⁵⁵ “Can a Computer be an Author? Copyright Aspects of Artificial Intelligence” by Timothy L. Butler

¹⁵⁶ Ibid., p. 743

¹⁵⁷ Ibid., p. 742

¹⁵⁸ Ibid., p. 743

¹⁵⁹ Ibid.

¹⁶⁰ Ibid., p. 744

¹⁶¹ Ibid.

¹⁶² Ibid., p. 745

¹⁶³ “Can a Computer be an Author? Copyright Aspects of Artificial Intelligence” by Timothy L. Butler, p. 746

Four decades later, nobody has seemingly managed to come up with a satisfactory solution to the problem regarding artificial intelligence and originality. While several solutions have been provided by various different scholars, like previously mentioned, there is still no universal approach or a catch-all solution to the problem. The concept of AI has grown exponentially and to the point that AI-related solutions are utilized on a daily basis by corporations and individuals alike, but there are still some great debates in existence in relation to the concept of originality regarding this matter.

4.4. Legal Personhood for Autonomous Machines

The European Parliament's Legal Affairs Committee published a report that outlined the possibility of "electronic personalities" for autonomous robots in 2017. The report caused quite a bit of controversy amongst scholars and experts in AI-related fields. Many of these scholars disliked the initiative due to the possible legal and ethical ramifications that could ensue due to its adoption.¹⁶⁴

Even before the report issued by the EU Parliament, the concept of legal personhood for robots has stirred up some debate among the scientific community. For instance, in 2007, Carson Reynolds and Masatoshi Ishikawa introduced us to *Robot Thugs*, autonomous machines that committed crimes. The aim of the creators of these thuggish robots was to figure out the accountability of the robots' actions. Whether the robots could be held accountable for their actions or not, and if so, to what extent.¹⁶⁵

Ugo Pagollo has introduced a threefold level of abstraction in order to address the debate on the legal personhood of robots. The system is as follows:

- (i) *"The legal personhood of robots as proper legal 'persons' with their constitutional rights (for example, it is noteworthy that the European Union existed for almost two decades without enjoying its own legal personhood);*

¹⁶⁴ "The timeline of e-personhood: a hasty assumption or a realistic challenge?" Maastricht University, available at: <https://www.maastrichtuniversity.nl/blog/2019/04/timeline-e-personhood-hasty-assumption-or-realistic-challenge>, accessed on 26.04.2020

¹⁶⁵ "The Quest for the Legal Personhood of Robots," by Ugo Pagollo, p. 1

- (ii) *The legal accountability of robots in contracts and business law (for example, slaves were neither legal persons nor proper humans under ancient Roman law and still, accountable to a certain degree in business law);*
- (iii) *New types of human responsibility for others' behavior, e.g., extra-contractual responsibility or tortuous liability for AI activities (for example, cases of liability for defective products. Although national legislation may include data and information in the notion of product, it remains far from clear whether the adaptive and dynamic nature of AI through either machine learning techniques, or updates, or revisions, may entail or create a defend in the 'product').”¹⁶⁶*

Pagollo points out that the report issued by the EU Parliament in relation to granting e-personhood to robots has caused a lot of confusion among the experts. He suggests that:

“it is unclear whether ‘the status of electronic persons’ refers to the full legal personhood of robots as proper legal ‘persons’, or regards their legal accountability in contracts and business law, or both.”¹⁶⁷

Indeed, confusion and division between the parties is quite apparent. While some scholars are for granting e-personhood to robots, for instance in order to end the current “slavery on robots”, other scholars believe that, in order for a robot to be considered a legal agent, it would require legal personhood.¹⁶⁸ The granting of legal personhood seems to be at the core of the issue here.

Sophia is a humanoid robot that is capable of socializing with humans. It has been developed by a Hong Kong-based company called Hanson Robotics along with Google. Sophia was first activated in 2015, and she made her first appearance in Texas in 2016. The algorithm behind Sophia’s programming has been both praised and criticized by experts. While people have been impressed by the level of sophistication regarding Sophia’s responses, experts have pointed out that many of the statements given by Sophia have, in fact, been scripted. Nevertheless, in spite of

¹⁶⁶ “The Quest for the Legal Personhood of Robots,” by Ugo Pagollo, p. 1-2

¹⁶⁷ Ibid., p. 4

¹⁶⁸ Ibid.

the criticism, Sophia has turned quite a few heads in high places. Among other things, she has actually managed to attain citizenship in Saudi Arabia.¹⁶⁹

The case of Sophia is just one example of an autonomous robot that could enjoy e-personhood or even legal personhood within the European Union and elsewhere. However, concerns of safety have been expressed by notable figures in relation to autonomous robots, namely Bill Gates and Elon Musk. In 2015, the Future of Life Institute issued out an open letter that addressed the challenges and threats posed by artificial intelligence.¹⁷⁰

Pagollo separates legal agency from legal personhood and argues that robots would not necessarily require legal personhood in order to enjoy some capacity of legal agency. He brings up the European Union as an example by pointing out that the EU existed without any legal personhood for two decades. Opponents of the e-personhood initiative have further argued that if robots were considered to be legal agents, they should also be considered as legal persons. In this sense, robots could be akin to corporations from a legal point of view.

Pagollo brings up three problems in relation to the above: first of all, granting robots legal personality is not the only way to deal with the issue. Other ways exist, too, such as registries for artificial agents. Second of all, there are several variations to legal personhood of corporations across the globe. For instance, the US and the EU systems are quite different from each other, namely in terms of privacy rights and political rights. Furthermore, corporations cannot be held criminally responsible for their actions. Third of all, the opponents of granting robots the status of legal persons should also be considered, who insist that granting robots this status could lead to human rights abuses and other such issues.¹⁷¹

Pagollo proposes some new forms of accountability for robot actors, such as registries, the aim of which would be to prevent risks relating to robotic liability. Pagollo, however, admits that the modern robots may not yet be sophisticated enough to be eligible for any sort of legal status. However, just because the level of sophistication may not be as high as it should be in regards to the matter, Pagollo reminds us that we should still be prepared for the future.¹⁷²

¹⁶⁹ Ibid., p. 3

¹⁷⁰ Pagollo, p. 4

¹⁷¹ Ibid., p. 6

¹⁷² Ibid., p. 9

4.5. The Idea / Expression Dichotomy

The idea / expression dichotomy is one of the most basic tenets of copyright law. It essentially states the following:

*“There is no copyright in an idea, copyright only subsists in its expression.”*¹⁷³

In that sense, copyright does not actually protect ideas. Instead, copyright protection is provided for how the idea itself is expressed. This could be in writing or drawing, for instance, among many other ways. In that sense, if a person were to discover a new invention and outlined how the invention works on a piece of paper, only the words on the paper would be protected by copyright, not the invention itself. If somebody were to copy the invention and use it, they would not be held liable for copyright infringement. However, patent law does award protection to the invention.¹⁷⁴

One major problem associated with the idea / expression dichotomy is that it may sometimes be rather difficult to differentiate between the idea and its expression. This is known as a doctrine of merger, which essentially means that when an idea can only be expressed in a specific way, the expression itself is not protectable. Additionally, there can be ideas where the changing of the expression would also change the idea itself. These types of expressions are typically not considered to be protectable, because doing so would also issue protection to the idea itself.¹⁷⁵

¹⁷³ “Principles of Intellectual Property Law,” by Catherine Colston, p. 174

¹⁷⁴ “The Idea/Expression Dichotomy and Its Impacts on the Blurring Copyright-Patent Paradigm,” by Md. Rezaul Karim

¹⁷⁵ “The Principle of Idea-Expression Dichotomy: A Comparative Study of US, UK & Indian Jurisdictions,” by Sankalp Jain, p. 2

5. PERSPECTIVES OF THE EUROPEAN UNION

As has been previously stated in this thesis, the situation in the European Union in relation to copyright law is mixed. While great attempts have been made at harmonizing the copyright legislation in different member states, the work is all but done. Several issues erupted in the beginning of the harmonization process. For instance, the individual member states questioned the purposes of harmonization in relation to the concept of originality due to differing viewpoints on the matter.¹⁷⁶ But in spite of the differing viewpoints from the member states, the concept of originality has now been included in most member states' copyright legislation. Furthermore, several aspects of copyright law have been harmonized within the EU member states, including those relating to computer programs, databases, and photographs.^{177 178} In addition, the concept of originality has been brought forward in the case law of the European Union.¹⁷⁹

Although many aspects of copyright law, especially those relating to the concept of originality, have been harmonized within the European Union, there are still quite a few member states with differing views on copyright law in-general that do not fall under the aforementioned harmonization attempts.¹⁸⁰ For instance, Guadamuz mentions in his work the differences between Spanish and German copyright legislations. The Spanish copyright law specifically states that the author of the work has to be a natural person. The situation in Germany is different, because the German copyright law does not include the requirement of a natural person to be involved in the creation of copyrightable content.¹⁸¹

¹⁷⁶ "European Originality: a Copyright Chimera. Scandinavian Studies in Law" by Gunnar W. G. Karnell, Stockholm Institute for Scandinavian Law 2002, p. 73-81

¹⁷⁷ "Directive 2009/24/EC of the European Parliament," available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0024&from=FI>, accessed on 29.01.2020

¹⁷⁸ "Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?" by Alen-Savikko et al, Lakimies, p. 981

¹⁷⁹ Ibid.

¹⁸⁰ "Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works" by Andrés Guadamuz, p. 10 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 29.01.2020

¹⁸¹ Ibid.

Several legal cases have attempted to bring some clarification in regards to copyright law within the European Union.¹⁸² These cases include the notable *Infopaq*-case, and the cases of *BSA*, *FAPL*, *Painer*, *Football Dataco*, and *SAS*.¹⁸³ The aforementioned cases will be looked at in more detail below.

In the case of *BSA v. Ministervo Kultury (C 393/09)*, it was contested whether graphical user interfaces (GUIs) could be protected by copyright under the Information Society Directive (Directive 2001/29) or the Software Directive. The case was initially brought to a Czech court due to the fact that the Ministry of Culture of the Czech Republic had refused to authorize the collective administration of copyrights to computer programs. According to the Ministry, the copyright law would only protect the object and source codes of the program, but not the GUI included due to the fact that the simple nature of the function of the GUI itself.¹⁸⁴ The case was referred to the Court of Justice of the European Union (CJEU.) The CJEU eventually ruled that GUIs could not be protected under the Software Directive due to the fact that a GUI could not be considered as a computer program. However, it was decided that a GUI could be protected under the Information Society Directive for as long as the GUI in question was the author's own intellectual creation.¹⁸⁵

The *FAPL*-case, also known as the joined cases of *Football Association Premier League Ltd and Others v. QC Leisure and Others (C-403/08)* and *Karen Murphy v. Media Protection Services Ltd (C-429/08)*, is a joined case of the CJEU. The case involved a number of questions, but the most relevant question in the context of this thesis is whether the live transmission of a premier league football match was protected under copyright law. In these cases, foreign decoder cards were used in order to watch live premier league football matches in the United Kingdom.¹⁸⁶ The High Court referred the case to the CJEU, and the CJEU subsequently ruled that the football matches in question were not protected by copyright law due to the fact that they were

¹⁸² "Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?" by Alen-Savikko et al, *Lakimies*, p. 982

¹⁸³ *Ibid.*

¹⁸⁴ "Graphical Users Interfaces can be protected by copyright, rules European Court" by Fieldfisher, available at: <https://www.fieldfisher.com/en/insights/graphical-user-interfaces-can-be-protected-by-copyright-rules-european-court>, accessed on 29.01.2020

¹⁸⁵ *Ibid.*

¹⁸⁶ "Live Premier League Football Broadcasting Rights: The CJEU judgment," Fieldfisher, available at: <https://www.fieldfisher.com/en/insights/live-premier-league-football-broadcasting-rights-the-cjeu-judgment>, accessed on 29.01.2020

considered to be sporting events, which do not fall under the protection of the Copyright Directive. In spite of the fact that the live transmission of the football match was not protected under the Directive, the court held that the works associated with the football match itself, such as the opening video sequence of the football match, the premier league anthem, and various graphics associated with the game, were actually protected under the Copyright Directive.¹⁸⁷

The case of *Painer v. Standard VerlagsGmbH (C-145/10)* involved a freelance photographer named Ms. Painer who had collected several photographs over several years. These photographs had particularly been taken of children. Ms. Painer sold her works off eventually. However, she did not consent to the publication of the works sold by her. One child by the name of Natascha K. appeared in some of the photographs taken and later sold by Ms. Painer. The photographs featuring Natascha K. were used by authorities in missing person posters. Natascha K. managed to flee from her captors in 2006. Subsequently, the photographs that featured Natascha K. were published in various newspapers, magazines and websites, none of which credited Ms. Painer as the original author of the photographs. Consequently, Ms. Painer sued the persons that used her photographs without her consent.¹⁸⁸

The defendants in the case insisted that they had not known the original author of the photographs due to the fact that they had received the photographs from a news source that did not mention the details of the original photographer. The case was referred to the CJEU, according to which the photographs were, indeed, protected by copyright law. However, the court also ruled that the photographs could be published by the media without the consent of the original author for the purposes of assisting the authorities in finding any missing persons or otherwise.¹⁸⁹

The case of *Football Dataco Ltd and Others v. Yahoo! UK Ltd and Others (C-604/10)* deals with the use of databases. In this case, fixture lists had been published by Football Dataco and the other claimants in the case. The defendants of the case had utilized the lists published by

¹⁸⁷ “Live Premier League Football Broadcasting Rights: The CJEU judgment,” Fieldfisher, available at: <https://www.fieldfisher.com/en/insights/live-premier-league-football-broadcasting-rights-the-cjeu-judgment>, accessed on 29.01.2020

¹⁸⁸ “Painer v Standard VerlagsGmbH (Case C-145/10)” available at: <http://curia.europa.eu/juris/document/document.jsf?jsessionid=621CF97EF84F4FA34013111730C11C2F?text=&docid=115785&pageIndex=0&doclang=en&mode=lst&dir=&occ=first&part=1&cid=2526223>, accessed on 29.01.2020

¹⁸⁹ Ibid.

Football Dataco without paying for their usage. According to Dataco, the lists were protected under the Database Copyright and the Database Rights. As such, the defendants should pay for utilizing them. The case was referred to the CJEU by the High Court of the United Kingdom.¹⁹⁰

The following questions were asked of the CJEU:

1. *In Article 3(1) of Directive 96/9 ... what is meant by “databases which, by reason of the selection or arrangement of their contents, constitute the author’s own intellectual creation” and in particular:*
 - (a) *Should the intellectual effort and skill of creating data be excluded;*
 - (b) *Does “selection or arrangement” include adding important significance to a pre-existing item of data (as in fixing the date of a football match), and*
 - (c) *Does “author’s own intellectual creation” require more than significant labour and skill from the author, if so what?*
2. *Does the Directive preclude national rights in the nature of copyright in databases other than those provided for by Directive 96/9?*¹⁹¹

The CJEU answered positively to all the other questions but 1(b). According to the court, the skill and labour associated with the selection or arrangement of the data is not sufficient as such to provide copyright protection. Originality has to be involved as defined by the court. In that sense, some sort of creativity must be included in the compilation of the data within the database.¹⁹²

The case of *SAS Institute Inc. v. World Programming Ltd (C-406/10)* involved two rival companies in the field of computer programming. SAS, the claimant, owned the copyright to a software environment known as Base SAS. Their customer were allowed to use the program in order to create applications that functioned in their program’s language. World Programming Limited (WPL) constructed a similar system (WPS) that could run applications created with the

¹⁹⁰ “Football Dataco copyright in databases,” Fieldfisher, available at: <https://www.fieldfisher.com/en/insights/football-dataco-copyright-in-databases>, accessed on 29.01.2020

¹⁹¹ “Football Dataco: skill and labour is dead!” by Estelle Derclaye, available at:

<http://copyrightblog.kluweriplaw.com/2012/03/01/football-dataco-skill-and-labour-is-dead/>, accessed on 29.01.2020

¹⁹² Ibid.

SAS language by emulating and reverse-engineering it. The outputs and inputs were integrated into the WPS. Subsequently, SAS sued WPL for copyright infringement.¹⁹³

The case was eventually brought to the CJEU, which subsequently ruled that the functionality, the programming language and the format of data files used in a computer program are not protected by copyright. Furthermore, the reverse-engineering of programs is allowed for as long as the person reverse-engineering the program has obtained a license to access and utilize the program in question.¹⁹⁴

Finally, the famous case of *Infopaq International v. Danske Dagblades Forening* (C-5/08) involves a company called Infopaq International (hereinafter referred to as Infopaq) that specialized in writing summarized articles. The articles were summarized from Danish newspapers by the use of a certain ‘data capture process.’ The articles are first selected by the autonomous program and then sent to the customers by email.¹⁹⁵

Danske Dagblades Forening (hereinafter referred to as DDF), an association tasked with assisting their clients with copyright matters, found out about Infopaq’s business model. Apparently, Infopaq had scanned newspaper articles for commercial purposes without the consent of the right holders. Subsequently, DDF filed a complaint against Infopaq, which conversely contested DDF’s claims and sued them in order for the DDF to allow Infopaq to continue their conduct.¹⁹⁶

The case was eventually referred to the CJEU. In its decision, the court had to determine whether the summarized articles were original enough to warrant copyright protection. The problem was that the summarizations were generated by a machine and not a human being. The court

¹⁹³ “English High Court Applies European Software Ruling in SAS v WPL,” Fieldfisher, available at: <https://www.fieldfisher.com/en/insights/english-high-court-applies-european-software-ruling-in-sas-v-wpl>, accessed on 29.01.2020

¹⁹⁴ “Case C-406/10,” InfoCuria, available at: <http://curia.europa.eu/juris/document/document.jsf?docid=122362&doclang=EN>, accessed on 29.01.2020

¹⁹⁵ “Infopaq International v. Danske Dagblades Forening,” Curia, available at: <http://curia.europa.eu/juris/document/document.jsf?jsessionid=D96E07DA0104B74131C5A60964864AD4?text=&docid=72482&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=1071055>, accessed on 29.01.2020

¹⁹⁶ Ibid.

eventually defined originality as being the “author’s own intellectual creation,” thus ruling that the summarizations could, indeed, be granted copyright protection.¹⁹⁷

5.1. Finland

The Finnish legal system is a unique mix of different legal doctrines and customs. While the legal system in Finland is not considered to be a part of the common law system that is widely utilized in countries like the Great Britain and the United States, the system is also not purely based on the civil law system that is used in most of the European Union, especially in France and Germany. Similarly, the copyright law of Finland has taken shape from various different legal systems and customs.¹⁹⁸ As such, the threshold of originality in Finnish copyright law is somewhere in between the rigid civil law concept and the more lenient common law threshold of originality.¹⁹⁹ Alen-Savikko has pointed out that Finland and other Nordic countries have not generally had any need to change their copyright legislation to reflect the European Union’s legal decisions due to the fact that Nordic countries are already following similar principles in their own copyright laws.²⁰⁰

According to a 1987 report by the Finnish Copyright Committee, works must be independent and original in order to receive copyright protection. As such, the author’s creativity has to be reflected in the work in question. According to the report, the computer is considered as a mere tool in the creation process. The creativity itself stems from the human being that is issuing commands to the computer.²⁰¹ Interestingly, the concept of originality has not been defined in the Finnish Copyright Act. However, the word “*alkuperäinen*” (original) has been mentioned in the Act and its amendments a total of 13 times, expressing that such a concept exists in Finnish

¹⁹⁷ “Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works” by Andrés Guadamuz, p. 11 available at:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 29.01.2020

¹⁹⁸ “Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?” by Alen-Savikko et al, Lakimies, p. 983

¹⁹⁹ Ibid.

²⁰⁰ Ibid.

²⁰¹ Copyright Committee Report KM 1987:8 (Finland), Tietotekniikka ja tekijänoikeus. Tekijänoikeuskomitean IV osamietintö, s. 177

copyright law.²⁰² Case law has also included the concept of originality. For example, the Copyright Council has examined the concept in its various decisions that will be looked at in more detail below.²⁰³

The Finnish Copyright Council (Tekijänoikeusneuvosto) is tasked with handling copyright matters for the Ministry of Education and Culture, and making recommendations about how the Copyright Act (404/1961) should be interpreted.²⁰⁴ The Council has made various decisions in relation to copyright law over the past decades. In the next following paragraphs, some of these decisions will be looked at in more detail from before and after the *Infopaq* case. It should be noted here that the decisions made by the Copyright Council are merely recommendations and thus they are not legally binding in nature.²⁰⁵

TN 1987:8 is a recommendation by the Copyright Council in which the applicant (A) had published a biography of a famous singer named Georg Malmsten. As the author of the work, A had the rights to the work in question. Another person had taken parts of the original work and used them in their own work without citing or crediting the original work created by A. According to the Copyright Council's recommendation, the person that had taken the citations from A's work without crediting them had violated the Copyright Act and the moral rights of the applicant.²⁰⁶ While the right of citation may not directly be the subject of this thesis, this case has nevertheless been introduced here for the purposes of clarity and demonstration as the case has some importance in relation to the concept of originality, which is one of the concepts examined in this thesis.

In TN 2005:10, a person by the name of Sylvi Kantele had asked the Copyright Council as to whether the word "*Aapponen*" (a play on words "*aapinen*" and "*aakkonen*," meaning the ABC-book and letters) could be granted copyright protection, in spite of the fact that *Aapponen* is also a Finnish surname. The Copyright Council decided that the term "*Aapponen*" would not receive copyright protection due to the high threshold of originality used in Finnish copyright law. The

²⁰² See the Finnish Copyright Act

²⁰³ "Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?" by Alen-Savikko et al, *Lakimies*, p. 984

²⁰⁴ "Copyright Council," Ministry of Education and Culture, available at: <https://minedu.fi/en/copyright-council>, accessed on 17.02.2020

²⁰⁵ Ibid.

²⁰⁶ TN 1987:8, available at: <https://minedu.fi/documents/1410845/3974652/Lausunto+1987-08+Sitaatti>, accessed on 17.02.2020

term itself was simply not original enough to warrant copyright protection, according to the views of the Council.²⁰⁷

TN 2006:14 had to deal with the protection of a periodical review. A certain company asked the Council whether a periodical review would be entitled to receive copyright protection.

Secondarily, the company wanted to know whether logos of certain magazines were protected by copyright. According to the Council, the work would have to be the result of spiritual creation in order to be eligible for copyright protection. As such, the work would have to be an original creation of the author in question in order to pass the threshold of originality. The Council decided that the review itself did not pass the threshold of originality due to the fact that it was not original enough in terms of the Copyright Act. Similarly, the logos in question were not original enough to warrant copyright protection.²⁰⁸

TN 2010:2 dealt with the copyright protection of a song verse. In TN 2010:2, the applicant had translated the song of “*Pippi Longstocking*,” the main character of a famous children’s novel, in Finnish. The applicant views that they own the rights to the translated version of the song. According to the applicant, the Swedish furniture store *Ikea* had used the Finnish translation in their advertisement campaign, dubbed “*Heikun keikun*” without the applicant’s permission. The expression was used by the applicant in the Finnish translation of the original song. *Ikea* contended that they had not used the translated version of the song in their campaign. They had merely used the expression “*heikun keikun*,” which, according to the furniture giant, was a common expression in the Finnish language. The Copyright Council sided with *Ikea*’s views. The expression was not original enough to receive copyright protection. However, the verse in the song was deemed to be original enough to warrant copyright protection. The Copyright Council thus also sided with the applicant on the matter, but only in relation to the full verse and not the shorter expression used. TN 2010:2 is a decision rendered after the CJEU’s *Infopaq* case.²⁰⁹

²⁰⁷ TN 2005:10, available at: <https://minedu.fi/documents/1410845/3929208/Lausunto+2005-10+Nimen+suoja>, accessed on 17.02.2020

²⁰⁸ TN 2006:14, available at: <https://minedu.fi/documents/1410845/3929201/Lausunto+2006-14+Tekij%C3%A4noikeus+lehtiarvosteluun>, accessed on 17.02.2020

²⁰⁹ TN 2010:2, available at: <https://minedu.fi/documents/1410845/3917568/Lausunto+2010-02+Laulun+s%C3%A4keen+suoja>, accessed on 17.02.2020

Alen-Savikko has mentioned that news articles written or generated by autonomous systems have reached the threshold of originality in decisions rendered by the Copyright Council.²¹⁰ As a requirement, the news articles in question have to be original enough insofar as they could not be replicated in a similar fashion. As such, Alen-Savikko recommends that such news articles be long and informative enough to warrant this originality.²¹¹

5.2. United Kingdom

The situation in the United Kingdom in relation to copyright law and artificial intelligence is rather unique when compared to other countries, because the UK actually has come up with legislation in relation to machine-generated content. The Copyright, Designs and Patents Act of 1988 (CDPA) includes a provision for computer-generated material. According to the CDPA Section 9(3):

“In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to the person by whom the arrangements necessary for the creation of the work are undertaken.”²¹²

As such, the laws relating to copyright in the UK could be interpreted as recognizing computers as content creators. In that sense, computer-generated content could be granted copyright protection under the CDPA.²¹³ However, it should be noted here that the term “computer-generated” has been described as meaning that there is no human author involved in the creation of the work in question.²¹⁴ However, Alen-Savikko has interpreted the meaning of the CDPA as

²¹⁰ “Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?” by Alen-Savikko et al, Lakimies, p. 986

²¹¹ Ibid.

²¹² “The Copyright, Designs and Patents Act of 1988”, available at: <https://www.legislation.gov.uk/ukpga/1988/48/section/9>, accessed on 02.03.2020

²¹³ Artificial Intelligence in EU Copyright Law by Dustin Jaacks, available at <https://medium.com/@dustin.jaacks/artificial-intelligence-in-eu-copyright-law-55798700da4>, accessed on 09.03.2020

²¹⁴ “The Copyright, Designs and Patents Act of 1988”, available at: <https://www.legislation.gov.uk/ukpga/1988/48/section/9>, accessed on 09.03.2020

meaning that the work in question must have an author. She explains that the work must be a result of the human mind. As such, Alen-Savikko is of the opinion that the work cannot be the product of a machine or an animal. She, however, notes that the UK law recognizes legal persons as authors in relation to computer-generated content.²¹⁵

The threshold of originality is considerably low in the UK when compared to other countries, such as the previously mentioned Spain or Germany. This has to do with the standard that has been applied to the granting of copyrights. In the United Kingdom, the standard that has been used is determined through the “skill, labour and judgment” test.²¹⁶ However, some scholars, such as Deming Liu, have suggested that after the *Infopaq* and *Painer* cases, the current doctrine has been diminished and, as such, the threshold of originality has become stricter in the UK.²¹⁷ However, Alen-Savikko has noted that, because of Brexit, the United Kingdom may very well discard the previous judgments by the CJEU and continue to follow their prior stance on copyright law, thus returning to the use of the “skill, labour and judgment” test.²¹⁸

The stance of the United Kingdom in relation to copyright and machine-generated content has been discussed further in case law. The case of *Express Newspapers v. Liverpool Daily Post* from 1985 is one of the most notable cases involving the use of a computer in relation to the creation of content. In this case, a competition involving the delivery of cards to its readers was published by the plaintiffs. Each card had a sequence of five letters to be tested against the winning sequences published by the Express group newspapers. The winning sequences were written on a five row grid and five letter columns. The Liverpool Daily Post repeated the winning sequences in their articles as the players did not need to buy the newspaper to get the cards. The plaintiffs consequently sued the Liverpool Daily in order to stop their current conduct.²¹⁹

²¹⁵ “Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?” by Alen-Savikko et al, *Lakimies*, p. 987

²¹⁶ *Ibid.*

²¹⁷ “Of Originality: originality in English copyright law: past and present” by Deming Lui, p. 385

²¹⁸ “Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?” by Alen-Savikko et al, *Lakimies*, p. 989

²¹⁹ “Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works” by Andrés Guadamuz, p. 8 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 09.03.2020

According to the defendants, the published sequences had been computer-generated and, as such, would not receive copyright protection as an author was missing from the creation of the work. In this landmark decision, the judge ruled that the computer was a mere tool of the programmer that issued commands to the computer itself to produce the sequences. The plaintiffs were thus awarded the injunction.²²⁰ The judge issued the following comment on the case:

*“The computer was no more than the tool [...]. It is as unrealistic as it would be to suggest that, if you write your work with a pen, it is the pen which is the author of the work rather than the person who drives the pen.”*²²¹

Although the *Express Newspapers* case came before the CDPA, the ruling is rather analogous with the current law. While the judge’s arguments are clear, some mystery still remains in relation to the author.²²² For instance, Angela Adrian has noted that the pen analogy used by the judge in the case may be used to enforce possession of the copyright to the user and not the programmer of the program.²²³

Another interesting case in relation to copyright law in the UK is that of *Nova Productions Ltd v. Mazooma Games Ltd*. In this case, Nova Productions Ltd (hereinafter referred to as Nova) was an arcade game creator. Mazooma Games Ltd (hereinafter referred to as Mazooma) was a rival company to Nova by making similar products as Nova did. Mazooma created a video game that utilized similar assets as a game previously created by Nova did. Nova subsequently sued Mazooma for copyright infringement. The lower court rejected the case, but Nova appealed.²²⁴ The appeal court eventually held the case in favor of the defendants by stating the following:

²²⁰ “Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works” by Andrés Guadamuz, p. 8 available at:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 09.03.2020

²²¹ *Express Newspapers Plc v Liverpool Daily Post & Echo Plc* [1985] 3 All E.R. 680.

²²² Guadamuz, p. 8

²²³ “Law and Order in Virtual Worlds: Exploring Avatars, Their Ownership and Rights” by Angela Adrian.

²²⁴ *Nova Productions Ltd v. Mazooma Games Ltd & Ors* [2007] EWCA Civ 219.

*“There was no additional protection for a series or graphic works such as moving elements of the game... given the concession that there was no frame-for-frame reproduction, there had been no relevant copying.”*²²⁵

According to the court’s reasoning, computer programs may share similar functions without necessarily infringing copyright, as per the so-called “idea-expression dichotomy.”²²⁶ The dichotomy itself states that “there is no copyright in an idea, copyright only subsists in its expression.”²²⁷ As such, according to the dichotomy, copyright does not grant protection to ideas, only the expression of the ideas in question.²²⁸ The judge issued the following remarks regarding the case:

*“Before leaving this topic there is one further complexity I must consider and that is the effect of player input. The appearance of any particular screen depends to some extent on the way the game is being played. For example, when the rotary knob is turned the cue rotates around the cue ball. Similarly, the power of the shot is affected by the precise moment the player chooses to press the play button. The player is not, however, an author of any of the artistic works created in the successive frame images. His input is not artistic in nature and he has contributed no skill or labour of an artistic kind. Nor has he undertaken any of the arrangements necessary for the creation of the frame images. All he has done is to play the game.”*²²⁹

The reasoning provided by the judge implies that authorship could only be granted to a person that “contributes skill and labour of an artistic kind.”²³⁰

²²⁵ Nova Productions Ltd v. Mazooma Games Ltd & Ors [2007] EWCA Civ 219.

²²⁶ Ibid.

²²⁷ “Principles of Intellectual Property Law” by Catherine Colston, p. 174

²²⁸ Ibid.

²²⁹ Nova Productions at 105.

²³⁰ Guadamuz, p. 10

6. PERSPECTIVES OF THE UNITED STATES OF AMERICA

In the United States, copyright matters are handled on the federal level as opposed to the state level. This essentially means that individual states have less authority in relation to copyright law in the U.S. The Copyright Act of 1976 provides the general framework for copyright law within the United States. The U.S. Constitution vests the Congress with the ability to create laws relating to copyright.²³¹

The United States Copyright Office handles all matters in relation to copyright within the United States. The Copyright Office issues out a Compendium on best practices in relation to copyright registration. 802.5© of the Compendium states the following:

*“To be copyrightable, musical works, like all works of authorship, must be of human origin. A musical work created by solely by an animal would not be registrable, such as a bird song or whale song. Likewise, music generated entirely by a mechanical or an automated process is not copyrightable. For example, the automated transposition of a musical work from one key to another is not registrable. Nor could a musical composition created solely by a computer algorithm be registered.”*²³²

The Compendium also includes a human authorship requirement, which effectively means that the work in question has to have been created by a human being.²³³ In that sense, it would seem that the United States does not allow machine-generated content to be copyrightable. Hristov has pointed out the harshness of the current stance, and argued that the lack of financial incentives may hinder the creative process of humans working on AI-related projects.²³⁴ However, in spite of Hristov’s criticism, companies are already heavily investing in AI-related solutions. When it comes to the creative side of AI, the creations have typically gone into the public domain, such

²³¹ Article I Section 8 Clause 8, United States Constitution, Stanford University Libraries, available at: <https://fairuse.stanford.edu/law/us-constitution/>, accessed on 22.03.2020

²³² Compendium (Third) § 802.5(C), p. 432

²³³ Compendium (Third) Chapter 300, Section 306, p. 8

²³⁴ “Artificial Intelligence and the Copyright Dilemma” by Kalin Hristov, p. 438

as in the case of *Dewey*, an artificial intelligence author that has authored books with very little human input involved.²³⁵

In addition to the aforementioned legislation, there is also some case law involved in relation to copyright law and machine-generated works. Some of the most profound cases regarding copyright law will be looked at below in more detail.

Alfred Bell & Co. Ltd. v. Catalda Fine Arts, Inc. et al, 191 F.2d 99 (2d Cir. 1951) is a U.S. case that looked into the concept of originality in relation to copyright law. In this case, the plaintiff, by the name of Alfred Bell, was a creator of mezzotint reproductions of original paintings by several eighteenth and nineteenth century artists. The original paintings had already entered the public domain and thus had no copyright protection any longer. Catalda Fine Arts, the defendant in the case, was not able to access the original copies of the works in the public domain, so they used the reproductions created by Alfred Bell, without having the authorization of Mr. Bell. Mr. Bell thereafter sued Catalda Fine Arts for copyright infringement. In court, the defendants argued that the reproductions were not original works and thus should not be copyrightable. The court eventually sided with Mr. Bell by stating that even slight changes in works constitute original works and are therefore copyrightable.²³⁶

Feist Publications v Rural Telephone Service Company, Inc. is a landmark case of the U.S. Supreme Court, presided over by Justice O'Connor. In this case, Feist Publications (hereinafter referred to as Feist) was a company that specialized in collecting and compiling telephone directories from the area of Kansas. Rural Telephone Service Company (hereinafter referred to as Rural) was a telecommunications company that was required to compile a phone directory of all of their customers, free of charge, due to the monopolistic nature of their operation. Feist sought to obtain a license to the information compiled by Rural, but Rural denied their request. Consequently, Feist copied the information without Rural's consent and were soon caught in the act. Rural sued Feist for copyright infringement. In their claim, Rural argued that they held copyright to the information in accordance to the *sweat of the brow doctrine*, according to which

²³⁵ "Dewey – The First Artificial Intelligence Novelist" by Alvaro Videla, Medium, available at: https://medium.com/@old_sound/dewey-the-first-artificial-intelligence-novelist-9ecd783c8fae, accessed on 22.03.2020

²³⁶ *Alfred Bell & Co. Ltd. v. Catalda Fine Arts, Inc. et al*, 191 F.2d 99 (2d Cir. 1951), available at: <https://law.justia.com/cases/federal/appellate-courts/F2/191/99/91570/>, accessed on 01.04.2020

copyright would be given to anyone that spent a significant amount of time and effort in their work. The lower courts agreed with Rural's notion.²³⁷

The case eventually reached the Supreme Court of the United States. Justice O'Connor eventually delivered his judgment, opining that information alone could not be copyrighted, but only the way the information was presented and arranged. As such, no creative expression was involved on Rural's part. Because of that, it was decided that Rural had no copyright over the works they had compiled.²³⁸

One more case in relation to copyright law and originality is that of *Naruto v Slater*. Mr. Slater was a photographer traveling in Indonesia and photographing the wildlife. In a strange turn of events, a macaque monkey, dubbed Naruto by the plaintiffs, picked up Mr. Slater's unattended camera and took selfies of herself. Mr. Slater subsequently shared the photographs online. The publishing of the photographs, however, caused a stir among animal activist groups. PETA, an animal activist organization, filed a lawsuit against Mr. Slater as "next friend to Naruto" for copyright infringement. The case was accepted and a panel was formed to decide whether Naruto had any claim to the photographs. It was eventually decided that while Naruto may have had constitutional standing to claim copyright infringement, Naruto in fact lacked statutory standing for her claim. The court reasoned that the Copyright Act "does not expressly authorize animals to file copyright infringement suits." As such, the case was dismissed.²³⁹

The aforementioned cases are some examples of how the U.S. legal system deals with matters related to copyright law and originality. While the cases detailed above do not deal with the concept of artificial intelligence in itself, the cases provide some insight into how AI-related matters could be handled in the U.S. legal system. In particular, the case of *Naruto v. Slater* gives some insight into whether non-human authors could be granted copyright protection.²⁴⁰ The answer seems to be a negative one, as the panel dismissed the case due to lack of statutory

²³⁷ Feist Publications, Inc. v. Rural Telephone Service Company, Inc., 499 U.S. 340 (1991), available at: <https://supreme.justia.com/cases/federal/us/499/340/>, accessed on 01.04.2020

²³⁸ Ibid.

²³⁹ *Naruto v. Slater*, No. 16-15469 (9th Cir. 2018), available at: <https://law.justia.com/cases/federal/appellate-courts/ca9/16-15469/16-15469-2018-04-23.html>, accessed on 01.04.2020

²⁴⁰ Ibid.

standing on the monkey's part. Similarly, a case involving the creation of an autonomous machine and copyright could very well be dismissed by the U.S. courts.²⁴¹

The Statute of Anne was enacted in 1710 in the United Kingdom. In spite of it being a piece of UK legislation, the Statute of Anne has served as a reference for early copyright law in the United States. Many of the provisions from the Act were utilized in the first U.S. copyright laws, such as a 14-year duration for copyright.²⁴² However, as the years progressed, international cooperation became more important due to the international nature of copyright law. The need for harmonization became more evident, and eventually, the U.S. copyright laws started to look more and more like its international counterparts. The duration of copyright has gradually increased, and the amount of copyrightable works has risen.²⁴³ The U.S. eventually became a party to the Berne Convention in 1989, furthering the harmonization and cooperation between other member countries of the Convention. However, in spite of all the harmonization and cooperation, the United States still have their own unique way of dealing with copyright law.²⁴⁴

The threshold of creativity is considerably low in the United States.²⁴⁵ This most likely stems from the United States' utilitarian perspective on copyright law. The idea is that granting copyright to the original creator is beneficial for the society.²⁴⁶ In the United States, the showing of "at least some minimal degree of creativity" is enough to meet the standard for creativity.²⁴⁷ In that sense, the amount of work committed to the individual creation does not matter in terms of granting the work copyright protection. All that matters in this regard is that there is at least some creativity involved in the creation of the work in question. However, if creativity is not involved, in spite of the amount of time committed to the creation of the work, the work will not suffice for copyright protection.²⁴⁸

²⁴¹ "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 4

²⁴² *Ibid.*, p. 3

²⁴³ *Ibid.*

²⁴⁴ *Ibid.*, p. 8

²⁴⁵ *Ibid.*, p. 4

²⁴⁶ "The Concept of Originality in the Copyright Issue of AI-generated Works in China" by Tianxiang He, available at: <https://www.qmul.ac.uk/euplant/blog/items/the-concept-of-originality-in-the-copyright-issue-of-ai-generated-works-in-china.html>, accessed on 06.04.2020

²⁴⁷ "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 4

²⁴⁸ *Ibid.*

Another thing typical for common law systems in terms of copyright law is that of fixation. The United States in particular requires fixation in order for a work to qualify for copyright protection.²⁴⁹ The law states that the work must be fixed in a tangible medium of expression. In other words, the work must be tied to some medium in which it can be perceived, reproduced or otherwise communicated.²⁵⁰ For example, a poem would be considered fixed if it was written down on a piece of paper. In that case, the paper serves as the medium that can be utilized for perceiving the work. Furthermore, the medium does not have to be readable by humans. It is enough that a machine is able to interpret and perceive the work in order for it to be fixed. As such, a computer's memory may very well serve as a medium for some types of works, such as computer programs.²⁵¹ U.S. law further states that the fixation must be made by the author of the work or by a person authorized by the original author of the work in order to be eligible for copyright protection.²⁵²

While the level of creativity is considered to be low in the United States, the level is by no means nonexistent. There are plenty of things that could be considered creative that do not exceed the minimum level of creativity in the United States. For instance, short phrases and headlines do not generally receive copyright protection in the U.S. even though coming up with clever catchphrases or headlines for newspaper articles does arguably require at least some creativity by the author.²⁵³ Ginsburg writes that it would make sense to exclude short phrases from receiving copyright protection due to the fact that they are essential for authors in order to create their own works. If individual words or short phrases were deemed to be eligible for copyright, it would become more difficult for authors to come up with words they could use for their creations.²⁵⁴

²⁴⁹ "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 5

²⁵⁰ "Obtaining Copyright Protection," Bitlaw, available at: <https://www.bitlaw.com/copyright/obtaining.html>, accessed on 06.04.2020

²⁵¹ Ibid.

²⁵² "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 5

²⁵³ Ibid., p. 6

²⁵⁴ Ibid.

7. AN ANALYSIS OF THE SIMILARITIES AND DIFFERENCES

In the previous chapters, this thesis has explored the perspectives of different European Union member states – namely Finland and the United Kingdom – and the United States of America as a whole in relation to copyright law and artificial intelligence. This chapter will focus on discussing the similarities and differences of the aforementioned countries in relation to the subject. The chapter will begin with analyzing the similarities between the examined countries, after which the differences will be further discussed in more detail.

7.1. Similarities

Thanks to international cooperation and harmonization, there are quite a few similarities between the countries examined in this thesis in relation to copyright law. The Berne Convention has promoted cooperation and harmonization in relation to the matter. For instance, the Berne Convention has set a 50-year minimum for copyright duration after the author's death.²⁵⁵ However, countries part of the Convention can choose to have longer durations for copyright at their will, and, as a matter of fact, both the European Union and the United States have chosen to set the duration at 70 years after the death of the author.²⁵⁶

Perhaps one of the biggest similarities between the European Union and the United States in relation to copyright law is what copyright actually is and how it is interpreted in different legal systems. The purpose of copyright is to protect audiovisual and other such works from being infringed upon.²⁵⁷ While there are some differences in relation to what exactly is protected and why, the purpose of copyright remains the same between both, the European Union and the United States.²⁵⁸

²⁵⁵ "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 12

²⁵⁶ Ibid.

²⁵⁷ Ibid., p. 1

²⁵⁸ Ibid., p. 2

Another similarity between the EU and the US in relation to copyright is that the threshold of creativity is considerably low in both places.²⁵⁹ In the European Union, it is enough that it is showed that the work in question has been created by the person in question. In the United States, some minimal degree of creativity is required in order to pass the threshold of creativity.²⁶⁰ In that sense, it could be construed that copyright protection is relatively easy to attain in both systems, for as long as the work in question is original, creative, and created by the person seeking protection for their work. Furthermore, neither place requires any formal registration to be made in order to have a work or creation protected by copyright. In both systems, copyright protection is automatic in nature.²⁶¹

7.2. Differences

There are quite a few differences in existence in relation to the systems utilized in both, the United States and the European Union. In addition, there are also some differences between different EU member states, in spite of numerous attempts, both successful and unsuccessful, at harmonizing the copyright law within the European Union.²⁶² In this regard, one of the biggest differences in relation to copyright law between the two continents is how copyright law has been formed and how it is being interpreted in both places.

When compared to the European Union, the situation in the United States is quite different in relation to copyright law. For one, copyright law is handled on the federal level in the US, as opposed to being handled by individual member states as is partially being done in the EU, apart from union-wide harmonization attempts.²⁶³ For two, the legal systems that govern these two continents are different, for the most part. The United States utilizes the common law system, whereas many of the EU member states utilize the civil law system. The United Kingdom is one of the few countries within the European Union that also utilizes the common law legal system.

²⁵⁹ “Overview of Copyright Law” (July 1, 2016) by Jane Ginsburg, p. 4

²⁶⁰ Ibid.

²⁶¹ Ibid., p. 8

²⁶² “European Originality: a Copyright Chimera. Scandinavian Studies in Law” by Gunnar W. G. Karnell, Stockholm Institute for Scandinavian Law 2002, p. 73-81

²⁶³ Ibid.

The duration of copyright law also differs between the United States and the European Union on some parts. While the duration itself is the same by default, 70 years after the author's death, there are some exceptions included that differ between the two continents. For example, in case of works whose authors cannot be tracked down, the duration of copyright is 70 years from the date of the publication within the EU. However, in the United States, the duration of copyright for works with no known authors is actually 95 years from publication or 120 years from the creation of the work, depending on whichever of the two expires first.²⁶⁴

There are also some fundamental differences in relation to copyright law in the continents examined. While the purpose of copyright remains basically the same between the EU and the US, the target of protection is a bit different. In the European Union, the target of protection is typically the author of the work. In the United States, however, the target of protection is the work in question. The United States relies on a utilitarian idea of copyright law, which entails that allowing authors to have property rights over their creations will incentivize them to make works for the greater benefit of society.²⁶⁵

While registration of copyright is technically not required in either the United States or the European Union, registering a work with the U.S. Copyright Office is actually very beneficial in terms of having a work protected. In cases of copyright infringement, it is much easier to prove ownership to the infringed work if the work in question has been registered with the Copyright Office in the United States. In fact, the registration of copyright is a prerequisite for judicial enforcement of copyright, in relation to works created in the United States. Also, registration is required in order to be entitled to statutory damages and attorney's fees in relation to all works, regardless of their country of origin.²⁶⁶

While the threshold of creativity is similar in both the US and the EU, the quantum of creativity is a different matter in relation to copyright law. In the United States, short phrases and simple designs are not typically considered to be creative enough to warrant copyright protection. However, the stance of the European Union seems to be quite different on the matter, as was

²⁶⁴ "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 12

²⁶⁵ Ibid., p. 2

²⁶⁶ Ibid., p. 4

demonstrated by the decisions of the *Infopaq* case. According to the judgment, a sequence of 11 words met the standard required for obtaining copyright.²⁶⁷

Plenty of other differences exist, as well, but they will not be looked into for the purposes of this thesis. Instead, the next part will be looking into the similarities and differences in relation to computer-generated content and copyright law within both continents.

7.3. On the status of computer-generated works

When it comes to computer-generated works and their eligibility for copyright protection within the European Union and the United States, there are both similarities and differences within these systems. While the United States does not allow for computer-generated content to be protected by copyright, as has been implied in the U.S. Copyright Act and shown in subsequent case law regarding the matter, the stance of the European Union is a little different in the sense that the EU is a bit more approving of non-human authors being eligible for copyright protection. This has been shown by the EU's e-personhood initiative, for example.²⁶⁸ Furthermore, some members states, such as Finland and the United Kingdom,

The United Kingdom is on the forefront of granting copyright protection to works generated by autonomous machines. The Copyright, Designs and Patents Act clearly provides for protection to works created by non-humans.²⁶⁹ However, the situation in other member states of the European Union is quite different. For example, both Spain and Germany have clauses in their copyright legislations that explicitly state that authors must be humans in order to have their works protected by copyright.²⁷⁰ The situation in Finland, however, seems to be quite promising, due to

²⁶⁷ "Overview of Copyright Law" (July 1, 2016) by Jane Ginsburg, p. 6

²⁶⁸ "The time of e-personhood: a hasty assumption or a realistic challenge?" by IGIR, available at: <https://www.maastrichtuniversity.nl/blog/2019/04/timeline-e-personhood-hasty-assumption-or-realistic-challenge>, accessed on 24.04.2020

²⁶⁹ "Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works" by Andrés Guadamuz, p. 7 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 24.04.2020

²⁷⁰ *Ibid.*, p. 10

the fact that news articles generated by autonomous machines have been eligible for copyright protection.²⁷¹

The United States have dealt with matters in relation to originality and authorship differently from other countries. The standard utilized in the United States was set by the landmark case of *Feist Publications*.²⁷² The case itself has already been discussed in a previous chapter of this thesis and, as such, it will not be looked at in more detail here. However, the importance of the outcome of the case should not be understated. The case set a standard for copyright protection, according to which protection may only be granted to components or parts of a work that are original to the author of the work in question. The standard itself is known as “modicum of creativity.”²⁷³ The standard set by the *Feist Publications* case is considerably different from the one utilized in the *Infopaq* case in the European Union. The standard could essentially mean that works with no human involvement would not receive copyright protection.²⁷⁴

²⁷¹ “Tekoälyn tuotokset ja omaperäisyysvaatimus – kohti koneorientoitunutta tekijänoikeutta?” by Alen-Savikko et al, *Lakimies*, p. 986

²⁷² “Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works” by Andrés Guadamuz, p. 13 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 24.04.2020

²⁷³ *Ibid.*

²⁷⁴ *Ibid.*

8. FUTURE IMPLICATIONS

The future implications regarding the relationship between artificial intelligence and copyright law are two-fold: for one, the developments of artificial intelligence and machine learning have to be taken into account. For two, the development of copyright law is of vital importance in determining what may be protected by copyright regimes in the future. The first point deals with how the concepts of artificial intelligence may evolve in the upcoming years. The second point looks into how copyright law itself evolves, based on the first point and other factors that may be involved.

Science-fiction typically envisions artificial intelligence to become smarter than human beings. Autonomous machines and robots are depicted as self-learning and sentient beings with feelings and emotions, and the capability to produce artistic works.²⁷⁵ However, the fact itself seems to be quite far away from the fiction. The reality surrounding artificial intelligence, while still very astounding, is far from what science-fiction envisions. In fact, it might take several decades or even centuries for AI to reach the level of humans in terms of abstract thinking, let alone to reach what some scholars consider as “singularity.”²⁷⁶

While autonomous robots may not be able to reach the level of humans anytime soon, AI and machine learning algorithms are able to produce works of artistic quality. The relationship between artificial intelligence and copyright law is thus rather important when looking into the future implications regarding these two concepts. The concept of originality is also an important part of the question, as has been pointed out by Andrés Guadamuz. According to Guadamuz, the international copyright system lacks proper harmonization in relation to the concept of originality.²⁷⁷

²⁷⁵ “The Future of Artificial Intelligence and Cybernetics” by Kevin Warwick, Technology Review, available at: <https://www.technologyreview.com/s/602830/the-future-of-artificial-intelligence-and-cybernetics/>, accessed on 24.04.2020

²⁷⁶ “Artificial Intelligence: Separating Fact from Fiction,” by Alexander Katrompas, available at <https://medium.com/granify/artificial-intelligence-separating-fact-from-fiction-c343e01a3400>, accessed on 24.04.2020

²⁷⁷ “Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works” by Andrés Guadamuz, p. 18 available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2981304&download=yes, accessed on 24.04.2020

Indeed, the differences between the European Union and the United States in relation to the subject are still far too wide. The thresholds for originality are much too different in order to promote any type of harmonization on the matter. Similarly, differences between the United Kingdom and other member states remain. The CDPA does not appear to be completely in line with the decision of the *Infopaq* case.²⁷⁸

The strict requirement for originality that has been utilized in the United States may very well disallow copyright protection from works created solely by machines. This type of interpretation could lead to economic problems as the amount of content generated by autonomous machines increased in the future.²⁷⁹

Several companies, such as Amazon, Google and Netflix, are using AI as a tool for improving their services. Amazon has actually deployed a system known as “Deep Scalable Sparse Tensor Network Engine” (DSSTNE, also known as ‘Destiny’ for short.) The system is used for displaying recommendations for users of Amazon based on their purchase histories or browsing habits. The system has also been made available to the public, for free, which may lead to other companies to use the system in order to provide and improve their services.²⁸⁰

While the systems have been created by humans, the systems themselves generate information procedurally, without any human involvement involved. As such, these systems are able to generate unique works independently. As things currently stand, the United Kingdom would likely be the only country where the creations generated by Amazon’s Destiny would be eligible for copyright protection.²⁸¹

Major companies like Amazon and Netflix may not be interested in having their works protected by copyright, especially since Amazon has released their Destiny system to the public, other companies utilizing these tools and similar tools may be of a different opinion. Harmonization and specification of the law would do wonders for the current situation. There is definitely need for clarification in this regard.²⁸²

²⁷⁸ Guadamuz, p. 18

²⁷⁹ Ibid.

²⁸⁰ Ibid.

²⁸¹ Ibid., p. 19

²⁸² Ibid.

9. CONCLUSION

Artificial intelligence and machine learning are vastly growing phenomenon that have fascinated humankind for centuries. While the terminology may be more recent, the concept of artificial intelligence has been around for much longer, as has been shown in the beginning of this thesis. The history of artificial intelligence, from the theories of ancient philosophers all the way to the Dartmouth conference in 1956, to the present day, and even beyond to the future, artificial intelligence continues to fascinate people all over the globe. While science-fiction has arguably given unrealistic connotations to the concept of AI, scholars have managed to ease the public's tension, at least for the most part.

The purpose of this thesis has been to look into whether machine-generated content could be eligible for copyright protection. In that sense, the concept of originality has played a key part in determining whether AI-generated content could actually pass the threshold of originality in order to be eligible for copyright protection. This thesis has further discussed the concept of authorship and who the author should actually be when it comes to AI-generated content.

This thesis has covered several topics, examples, and concepts in relation to the subject of the thesis, artificial intelligence and copyright law. The introductory part has outlined the background, the research questions and limitations, the research methods and sources, and the structure of the thesis in detail. The second chapter defined artificial intelligence by covering the history and definition of artificial intelligence as a concept. Furthermore, the differences between artificial intelligence and machine learning were touched upon.

The third chapter outlined some justifications for copyright protection, but also arguments against copyright law. These arguments and justifications were of normative and doctrinal nature. The chapter further introduced some limitations for copyright law. Some of the arguments that were looked at in favor of copyright protection were in relation to the protection of value, marketplace competition, aesthetic merit, and the use of humans as proxy authors. The arguments against copyright protection included things like the humanness of authorship, the responsibilities that come with the rights granted, originality, and derivative works. These arguments were further divided into several subcategories and were looked at in more detail in

the corresponding chapter. Finally, the exceptions and limitations of copyright law were discussed. As the chapter demonstrated, the access to information and the freedom of speech are among the reasons for limiting copyright protection of creations.

The fourth chapter looked at the concept of authorship and looked into the issues relating to artificial intelligence authorship. Furthermore, it was discussed who the owner of the copyright would be in case machine-generated content were deemed to be eligible for copyright protection. The first part of the chapter discussed the issues relating to authorship in regards to the subject of the thesis. A total of four issues were listed. These were in relation to the incentives, the concept of originality, the duration of copyright, and the fact that AI is capable of producing a high amount of works in a very little time span. The second part of the chapter focused on who the owner of the copyright could be in a situation where machine-generated content was copyrightable. Several ideas were introduced during the course of the chapter. For instance, the rights to content generated by machines could go to the owner of the source code or software, the machine itself (though corporate authorship), the owner of the machine itself, or perhaps the public domain.

The fourth chapter also included subchapters on the concepts of originality, the legal personhood of autonomous robots, and the idea / expression dichotomy. The subchapter on originality discussed the capability of machines being original and creative in the same way as humans. Several examples were looked at, such as *The Next Rembrandt*. Furthermore, the opinions of several scholars, such as Andrés Guadamuz, Tianxiang He, and Timothy Butler were introduced in the chapter. The subchapter on the legal personhood of autonomous robots discussed the prospect of granting legal personhood to robots. The European Parliament's e-personhood initiative was also discussed in part in relation to the subject of the subchapter. While there is still no coherent conclusion in regards to whether robots should be granted legal personhood or not, humanity should be prepared for robots sophisticated and advanced enough to be granted legal personhood. When that day comes, we should be ready to answer that question in a manner that satisfied the questioning side.

The fifth chapter focused on the perspectives of the European Union as a whole and through the eyes of certain member states of the European Union, namely Finland and the United Kingdom. The chapter began with a general outline on the situation in the European Union, before moving

over to the individual member states of the EU. The general part included several cases of the CJEU that dealt with matters relating to copyright law and originality. The *Infopaq* case is especially of importance in understanding the legal stance of the European Union in regards to the topic of this thesis. When looking at the individual member states, Finland and the United Kingdom were introduced, in spite of the fact that the UK will be leaving the EU in 2021. The reason why the UK was chosen as one of the countries examined in this thesis is due to the UK's significant impact on EU's copyright law, and also because the UK is a common law country, as opposed to its counterpart in the thesis, Finland.

The subchapter on Finland discussed the general nature of Finland's copyright law and the legal system in-general, being an interesting and unique mix of different countries' legal systems due to its history. Later on, several cases of the Copyright Council were introduced in the chapter for demonstrative purposes. Alen-Savikko had previously pointed out that news articles generated by machines would be eligible for copyright protection. This little detail brought some positive light in regards to the relationship between artificial intelligence and copyright law as it showed that AI-generated content could, indeed, be copyright-protected in Finland.

The United Kingdom showed equal promise in relation to the topic of this thesis. The CDPA clearly allows for computer-generated content to be copyrightable. However, some of the case law introduced in the chapter gave a different insight on the matter: it was even suggested that human involvement would be required in order to surpass the threshold of originality in the UK. Furthermore, the decision of the *Infopaq* case has had an impact on UK's copyright law, changing the standard used for determining the eligibility for copyright protection. However, as pointed out by Alen-Savikko, it is possible that when the UK leaves the EU, the UK will go back to its previous, more lenient standard of copyright.

Similarly, the sixth chapter looked into the perspectives of the United States in relation to the topic of this thesis. In spite of being a common law country like the United Kingdom, the United States was shown to have a very different stance on the subject. The Copyright Act of the United States does not allow for non-human authors. While some scholars have proposed the works-made-for-hire doctrine to be used in relation to machine-generated content, there is currently no hope for such a development to happen. The *Feist Publications* case holds too much merit

regarding the matter. The threshold of originality remains too high for machine-generated content to be eligible for copyright protection in the US.

The seventh chapter examined the similarities and differences of the two continents that have been under the microscope of this thesis. Several similarities and differences were introduced in the chapter. While great attempts at harmonization have been made in relation to copyright law globally, even successfully, some great differences still remained between the United States and the European Union, stemming from historical and philosophical reasons. For instance, the utilitarian perspective of the United States has the interest on protecting the work itself. The European point of view is on the author of the work. Furthermore, and perhaps more importantly in regards to this thesis, the concept of originality had all but been harmonized between these two continents. The threshold of originality in the US and the EU is simply too different for any cooperation to be made in regards to the matter. However, as Guadamuz had pointed out, there is currently some scope for harmonization, which essentially stems from the financial needs of small and medium-sized companies.

Lastly, the eighth chapter introduced some future implications in relation to artificial intelligence and copyright law, and how the situation may change in the future. This chapter essentially focused on how artificial intelligence may evolve in the future, and how copyright law may develop along with the development of artificial intelligence and autonomous robots. Amazon's Destiny was looked at as an example of need for harmonization and clarity in terms of the copyrightability of databases and procedurally generated content. While the future of AI is clouded, it is certain that AI systems will continue to be developed, and become more sophisticated and more advanced by each passing decade. As such, it would be a good idea to prepare for the future by coming up with more ways to determine how AI-generated content should be considered in the legal spectrum.